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NEWS DIGEST

DOMESTIC

John A Collins, Trans World Airline vice president-operations for Transcontinental Division has assumed direction of both overseas and domestic operations of the company Otis F Bryan, TWA vice president for international service, has been transferred to New York to assist board chairman W L Pierson in activities of several foreign airlines in which TWA has interests

Navy has developed plastic-coated fiberglass fabric zipper bags for a short-term (90 day) storage of aircraft New, form-fitting bags require only 30 man-hours to install and contain dehumidification equipment

Domestic air express shipments increased 23 8 percent for nine months ended Sept 30 over the same period last year Weight of shipments increased 69 percent with average weight up from 14 lb to 18 6 lb

Thomas K Finletter, chairman of President Truman's Air Policy Commission, will be guest speaker Jan 26, 1948 at the Institute of the Aeronautical Sciences dinner, Hotel Astor, New York City This will be his first public appearance since accepting his commission appointment Commission report is due Jan 15, 1948

FINANCIAL

Curtiss-Wright Corp declared a 25 cent dividend payable Dec 31 to holders of common on record Dec 18 The dividend will be paid out of prior years' earnings

Minneapolis - Honeywell Regulator Co. declared a year end extra dividend of 50 cents a common share payable Jan 3, 1948 to holders of record Dec 20 Total dividend for the year is $2 50 as compared to $1 80 last year

Glenn L. Martin Co reports net loss of approximately $15,500 000 after giving effect to tax carryback credit of about $20,500,000 Martin estimates more than $15,500,000 of the latter will be forthcoming and plans litigation for the remaining $5 million to which it believes it is entitled

FOREIGN

Special Douglas survey plane of the Argentine Navy completed the second nonstop flight from Southern Argentina over the South Polar region

Photographic Survey Co, Toronto, was awarded a contract for photographing 25,000 square miles for the Venezuelan government Company is purchasing three Lockheed 14s from Trans-Canada Air Lines and sending these and a fourth similar aircraft, already owned, to Venezuela for the survey

THE AVIATION WEEK

"FIRST CATCH YOUR RABBIT"—Observers of air transport, studying the initial unfolding of the House Post Office Subcommittee's hearings on airmail payments, are wondering if perhaps the committee has started off too fast. The group is eliciting testimony on proposals to separate "subsidy" and "service" charges in mail payments—which to many in air transport smacks of violating the old rule about making rabbit stew.

It never has been generally established and acknowledged by all concerned that mail payments do include a subsidy.

One difficulty in arriving at a decision on this point is in determining apportionment or allocation to airmail revenue of the Post Office's overhead costs. The airlines, of course, can calculate the direct cost to them of carrying the mail, the PO can similarly estimate the direct cost to it of handling airmail. But while the PO has its own formula for apportioning or allocating the other costs, it is a method with which outsiders do not always agree.

To date, the airlines have not deemed it wise to argue with the PO's cost-allocation basis. The carriers long have contended their mail rates are equitable, but while the Post Office's accounting has piled up deficit after deficit on the airmail service, the lines have been wary of demanding a close scrutiny of the method of bookkeeping. Some transport statisticians at times have believed the PO airmail deficit estimates have been low.

Another possible determinant in the subsidy examination, difference between an airline's calculated cost for carrying mail and payments received, is also shaky. The big area for argument remains how much profit should be due the airline.

HEAVY RESPONSIBILITY—The proposal favored by the subcommittee chairman, Rep. Edward Rees (R., Kans.), to make CAB determine cost-plus-"reasonable" profit mail rates and then decide amount and extent of subsidies would give the board a responsibility perhaps heavier than any it now bears.

Although in pondering the bestowal of a subsidy CAB would be guided by the needs of promoting commerce and the national defense, these are the same criteria the board has always had—which have been variously interpreted.

Actually, there is no real purpose to be served by thus linking mail payments to subsidy payments. If Congress authorized CAB to make subsidy payments out of funds appropriated for that purpose, it could arrive at its decision within the limits laid down without considering the question of mail pay at all. Mail payments up to now have been the only device possessed by the Board to help airlines deemed necessary for commerce and national defense. Because of the heavy payments to some lines and the fact that they still operated deeply in the red, it has been commonly supposed that the mail payments were in fact subsidies.

One of the delicate questions that would be before the board should the Rees proposal win out would be what to do about air freight lines. They serve a definite commerce need. To some extent, at least, they are valuable to the national defense. Yet, the needs of the postal service—as far as speedy carriage is concerned—do not depend on the freight lines. Could a freight line qualify for a subsidy when there was no question of mail pay involved?

WHAT PRICE SUBSIDY?—Long-time observers of air transport's development are concerned about what seems to be a calm acceptance by so many Congressmen (and even people in the industry) that air transportation needs and should have a subsidy.

In the preliminary stages of the hearings, no one has taken issue with this concept. The arguing has been over whether present mail payments constitute a subsidy and whether payments should be labeled "subsidy" or "service" charges. There apparently has been no consideration yet given to the basic conditions and long-range implications of a subsidy.

One strategically-placed observer of the industry points out that it is axiomatic that the greater the subsidy, the greater the control by the agency bestowing the subsidy. That is a fundamental truism of government. The difference between a strictly bureaucratic industry and a state-managed industry could be a matter of words.

Conceding that not all lines would need or want a subsidy (that would result in greater government economic control over their operations), the puzzler is how successfully air transportation could continue to thrive and grow half free and half state-managed.

STEAMSHIP ARGUMENTS—Curiously, the effort to separate the mail payments is being backed actively by one company in particular that should have ample documentation of the effects of government control over transportation. This is Waterman Steamship Lines, one of the few U. S. ocean carriers that does not have a subsidy contract with the Maritime Commission.

At one time in the past, it has been reported, Waterman did have such a contract, but long since decided it was better off taking its chances in the usual privately-conducted business manner.

Subsidies in shipping never have been able to strengthen and expand that industry. Postwar experience in the industry is not yet sufficient on which to form judgment, but prewar, it was a contracting industry, despite subsidies.

The Rees Committee, and the airline representatives, probably will be pondering those factors when the hearings resume next month.

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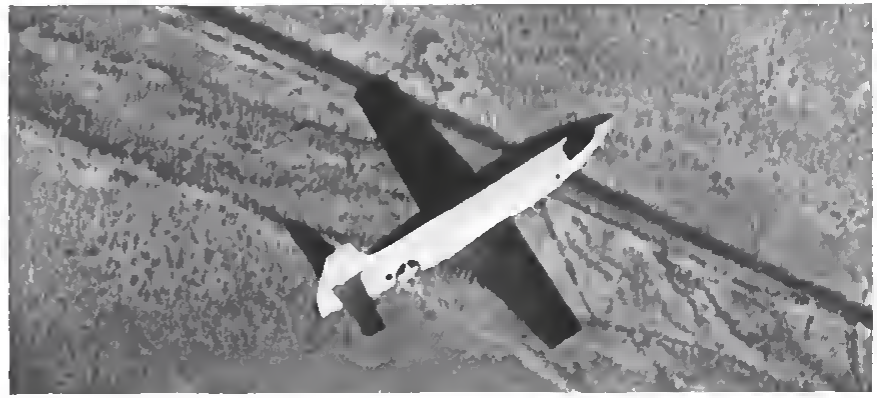


Bell XS-1 Makes Supersonic Flight

Air Force and NACA pilots fly beyond mach No. 1 in secret Muroc tests; report "no undue difficulties".

By ROBERT McLARREN

The Bell XS-1 has flown faster than the speed of sound.

First piloted flight through the transonic zone was made by Capt. Charles Yaeger of the U. S. Air Force more than a month ago. This flight and several subsequent penetrations beyond mach 1 by Yaeger and NACA test pilots Howard Lilly and Herbert Hoover have been shrouded in heavy official secrecy.

▶**Altitude Record**—All of these supersonic flights have been made at the Air Force's Muroc, Calif. Desert Flight Test Center. Flights were timed by radar tracking at altitudes of from 40,000 to 70,000 ft., setting new altitude records for airplanes.

Biggest surprise was the ease with which these historic flights were executed. None of the pilots experienced any undue difficulties during their supersonic flights. Severe stability, control and structural load problems, generally anticipated, failed to materialize.

▶**Significant Factors**—Another significant factor was the use of a straight-wing aircraft in the first successful supersonic flight. Results of transonic wind tunnel research indicated the desirability of swept back wings in passing from subsonic to supersonic speeds. A large part of the joint Air Force-Navy-NACA supersonic flight research program was designed to explore the comparative efficiencies of straight and swept wing configurations.

Now the strong possibility exists that swept wings will not be required for supersonic aircraft and a re-evaluation of high speed design characteristics of current projects is indicated.

While no longer a danger zone for specially-designed research airplanes, the transonic speed range continues as a major menace to conventional aircraft designed for subsonic flight. Such high speed fighters as the Air Force's Republic P-84 and North American P-86 and the Navy's McDonnell FD-2 and Grumman F9F would face serious difficulties at mach No. 0.9 and above due to their wing and empennage design. The sonic barrier has not been destroyed but only opened to those airplanes designed specifically for supersonic flight.

Data obtained during the first supersonic flights will be reflected in the Air Force program for a new stable of supersonic interceptor fighters. Republic, Lockheed, McDonnell and Convair are already working on experimental models of these fighters featuring combinations of rocket and turbojet power with design speeds up to mach 1.2. Republic has already changed its needle-nosed XP-91 design back to straight wing and empennage from its original swept-back planform.

▶**Program History**—The high speed flight research program that culminated in the first supersonic flight is a joint Air Force, Navy and NACA enterprise that began with a Wright Field conference in November 1944. Research aircraft contracts were let less than a year later and the XS-1, the first aircraft to be completed under the contracts, made its initial flight tests (without power) in the spring of 1946.

The XS-1 type has made more than

50 air-launches from its Boeing B-29 "mother plane" and has increased its flight speed at small but steady increments since its first powered flight just one year ago. High subsonic mach number flights were begun in earnest last summer at Muroc following completion on mach number 0.85 flight tests by Bell test pilot Chalmers H. (Slick) Goodlin, now a writer in Hollywood. His tests revealed a tendency of the airplane to "tuck under" (pitch its nose down into a dive) as mach 0.85 was reached and these reports resulted in modifications to the airplane which subsequently inhibited this tendency to a degree eliminating its danger.

Bell XS-1

Reaction Motors Rocket Engine

Span	28 ft
Length	31 ft
Height	10 ft
Weight (empty)	4,892 lb
(gross)	13,400 lb
(landing)	5,200 lb
Maximum design speed	1,017 mph @ 40,000 ft
	1,700 mph @ 80,000 ft

▶**Changes in Original**—The supersonic XS-1 varies from the original airplane in several respects. Wing is only 8 percent thick (thickness divided by wing chord) as compared to the 10 percent thick wing of the original plane. Pressurized fuel system, which created lengthy delays through fuel pumping and metering difficulties, has now been improved with a turbine pump system, eliminating most of the required ground time on the airplane. Reaction Motors rocket engine, consisting of four chambers each rated at 1,500 lb. static thrust, has been considerably improved and higher grade rocket fuels have combined to produce higher thrust power than previously available. Tail surfaces have been replaced by 8 percent sections and improved balance and control system has eliminated earlier difficulties.

Wing skin panels are machined from solid aluminum alloy bar stock with one-half inch thickness at the root and one eighth inch at the tips. Maximum load factor is 18, half again that of conventional high speed jet fighter planes, enabling the craft to sustain a load of 102 tons without failure. Wing loading is more than 100 lb. per sq. ft. at the maximum loaded weight with four tons of fuel aboard.

▶**Steady Increase**—After the NACA and Air Force took over the XS-1 flight test program last July high speed tests began and the sonic barrier was approached steadily with mach Nos. 0.90, 0.92 and 0.96 being recorded. Actual sonic and supersonic flights were made in steep climbs after the air-launch at 40,000 ft. Climbing altitude offered the following advantages: tremendous fuel consumption decreased the weight of the airplane rapidly producing an increasingly favorable thrust/weight ratio, progressive drop in air density as the plane climbed lowered its drag, steep climb minimized the effect of shock wave wing lift interference by increasing the airplane weight component on the thrust and decreasing it on the wing lift.

Actual speed of the XS-1 need only have been 662 miles per hour, the speed of sound above 35,000 ft. This speed in miles per hour has been attained by the Douglas D-558 Skystreak at sea level. The latter performance represents only mach number 0.87 compared to the 1.1 of the XS-1 flights. No cockpit heating difficulties were experienced with the XS-1 due to the extreme (—67 degrees F) cold of the stratosphere. Cockpit temperature rose only about 95 degrees F in the XS-1, whereas the same flight at sea level would have generated cockpit temperatures of more than 160 degrees F.

▶**Other Planes Listed**—Both Air Force and NACA engineers readily admit that these historic supersonic flights have not provided the final answer to supersonic flight design and the technological surface has merely been scratched. Air Force and NACA as well as the Navy Bureau of Aeronautics and aircraft manufacturers are steadily increasing their staffs at Muroc in preparation for new research aircraft.

• **Douglas D-558-2 (Skyrocket)** recently completed and scheduled for first test flight in January heads the list of new supersonic research types. This lancer-like craft uses the same rocket engine as the XS-1 but incorporates more advanced aerodynamic design.

• **Bell XS-2**, a swept-wing version of the XS-1, is nearing completion and is scheduled for test flights early next spring.

• **Douglas XS-3**, utilizing a "double wedge" airfoil, is slated for extremely high supersonic speed and should be ready early next fall.

• **Northrop XS-4**, while a high speed research craft, is not intended for sonic speed but will test the stability of the flying wing type of aircraft at high subsonic speed.

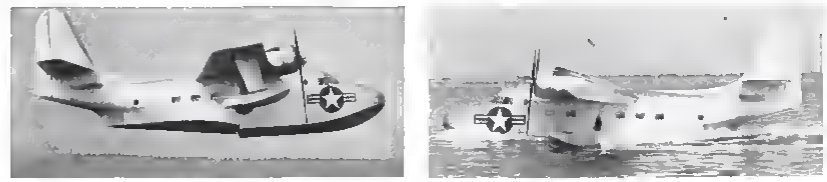
▶**International Roundup**—Achievement of the first supersonic piloted aircraft flights indicates a solid foundation of American technical superiority in the high speed flight field. The British nearly a year ago abandoned their piloted supersonic research program and are now attempting to carry on high speed research with rocket-powered scale models.

The French are still exploring the top ranges of subsonic speeds and have no completed aircraft designed for transonic speeds.

Russia remains an enigma but there are no indications of a Russian supersonic flight research program although numerous supersonic wind tunnel research facilities are operating, according to all available sources.

LATEST NAVY FIREFIGHTING TACTICS

Demonstration of the latest Navy firefighting equipment squelching an engine fire caused by leaking gas on a PBM. An FFN-4 truck (foreground) carries three tons of refrigerated low pressure carbon dioxide and 1,000 gal. of foam compound. FFN-5 foam tanker truck (left background) can discharge 4,000 gal. of fire extinguishing foam per minute. Crane spray on the FFN-5 is smothering the engine with foam while turret on the FFN-4 is shooting cooling fog compound at the source of the fire. Manually operated carbon dioxide sprays smother gas burning on the ramp. (Navy photo)



GRUMMAN ALBATROSS DEMONSTRATES VERSATILITY

Lines and layout of Grumman XJR2F-1 are shown here in flight and water taxi demonstrations. NACA-designed hull lines enable craft to operate in 4½ ft. waves. With 4,100-lb. cargo load, Albatross can get off water in 12 seconds with JATO units. Designed for Navy sea-air rescue duties, the amphibian can carry 14 passengers at a cruising speed of 225 mph. and a top speed of 270 mph., marking it the fastest amphibian ever built. It can attain 212 mph. with one propeller feathered.

House Committee Weighs Plans To Reclassify Air Mail Payments

Postmaster General favors clarification on Post Office deficit due to airline subsidies; air parcel post, first class airmail discussed.

A House Post Office Subcommittee is weighing two proposals to earmark the "subsidy" portion of mail payments to air carriers—a step interpreted by Air Transport Association as designed to lay the scheduled airlines open to attack by competitive steamship lines, railroads, and non-scheduled air freight carriers.

The proposals, both given to the subcommittee by newly-appointed Postmaster General Jesse Donaldson who testified in favor of a revision in the present method of mail payments which would clarify the amount of Post Office operating deficit due to airline subsidization, are:

(1) That Civil Aeronautics Board ascertain cost-plus-reasonable-profit mail pay rates for each route segment. Additional government assistance to air carriers, deemed essential by the Board in the interests of promoting commerce or the national defense, would take the form of outright payments to the carriers from funds appropriated to CAB for the purpose of airline subsidization.

That the Post Office Department in its accounting separate "subsidy" from "service" payments to air carriers, but continue to make both type payments from its appropriations.

▶**Rees View**—Subcommittee chairman, Rep. Edward Rees (R., Kans.) favored the first proposal last week, as his group concluded its first round of hearings aimed at correcting the air mail operating deficit of the Post Office, estimated at approximately $15 million for the 1947 fiscal year. This proposal, Rees commented, "would place responsibility where it belongs. CAB would determine subsidy payments to carriers, and therefore should be the agency required to justify appropriations for these payments to the appropriations committees of the House and Senate."

Subcommittee heard testimony from Postmaster General Jesse Donaldson and Second Assistant Postmaster General Paul Aiken, who urged the establishment of an air parcel post system and retention of the five cents per ounce postal rate. CAB Chairman James Landis, ATA Executive Vice President Robert Ramspeck, who vigorously opposed the proposed separation of air mail subsidy and service payments, Robert Kline, counsel, Sea Air Committee, Roland Rice, counsel, Association of American Railroads, Bon Geaslin, counsel, Waterman Steamship Lines. The non-scheduled airfreight operators were represented by Earl Slick, president, Slick Airways; Robert Prescott, president, Flying Tigers Line, and George Haney of California Eastern.

▶**Hearings Postponed**—Subcommittee postponed its second and final round of hearings on the air mail issue until January so that hearings by another subcommittee of the Post Office Committee, headed by Rep. Katharine St. George (R., N. Y.), on a related subject—the desirability of establishing an independent postal rate-making body—could get underway.

On resuming hearings, the Rees subcommittee, after digesting the contradictory testimony of airline, steamship, and non-scheduled air freight representatives, expects to cross-examine witnesses.

▶**Landis Testimony**—Major portion of Landis' testimony questioned the existence of any subsidy element in mail payments to air carriers. Suggesting that passenger-, property-, and mail-carrying airlines afford the government the most reasonable possible method of transporting mail because of their several sources of revenue, Landis proposed that "the question arises as to whether any of the present mail payments are not appropriately chargeable to the mail service."

In the factual portion of his testimony, the CAB chairman offered six arguments in favor of separating mail service and subsidy payments to carriers, and only two arguments against it, one of which he conceded was not valid. He proposed four categories of air mail service payments: A "long haul" rate (over 500 miles) of 50 cents per ton mile, a "trunk line" rate (100 to 500 miles) of 75 cents per ton mile, a "local" rate (50 to 99 miles) of 15 cents per plane mile; and a feeder rate (below 50 miles) of 45 cents per plane mile.

Landis' arguments favoring the establishment of a classified service rate system were:

(1) Once established, the system would simplify CAB's rate procedures.

(2) Competitive operations would receive the same rate of mail pay.

(3) Carriers of different size would be better able to compete. The disadvantage of one carrier appearing to receive mail pay to support competition against another, which exists in the present method of system-wide carrier rates, would be removed.

(4) Comparisons of management would be easier. Operators of non-lucrative routes would not be stigmatized.

(5) The primary weakness of system-wide mail rates—the rates are averages with no necessary relation to the actual costs of performing any specific service—would be avoided.

(6) Attention would be focused on high cost routes, paving the way for de-

terminations as to whether they should be continued

The obvious difficulty of establishing and applying a system of classified service rates was put forth by Landis as the plan's major disadvantage. Its second disadvantage might be, he said, that some carriers would receive larger payments than under the present method of system-wide rates, with lucrative operations balancing non-lucrative operations He volunteered, however, that the competitive spur of classified route rates would promote maximum operational efficiency.

▶**Separation Urged**—Without being specific, representatives of the steamship lines, non-scheduled airfreight operators, and the railroads vigorously urged the separation of service from subsidy air mail payments A government ascertainment of subsidies to airlines, carrier by carrier, would probably strengthen and draw public attention to their contention that the scheduled airlines are using government support in unfair competition against other types of transportation.

▶**Other Proposals**—Two other subjects crept into the proceedings

(1) ATA, airfreight, and Post Office witnesses urged legislation authorizing the inauguration of air mail parcel post service Slick and Prescott asked only that non-scheduled airfreight operators be given an opportunity to bid competitively with the scheduled lines on parcel post contracts, but California Eastern's Haney "very definitely" recommended that the scheduled lines be precluded from rendering the service Haney suggested that the scheduled lines might use their air mail subsidies to under-bid and drive the non-scheduled lines from the parcel post field, and then, when they were no longer faced with competition, increase the rates to take care of overhead allocations for elaborate offices and passenger service.

(2) Landis and Donaldson opposed the proposal which has been placed before the President's Air Policy Commission to increase first class postage to four cents per ounce and dispatch it, except for short hauls, by air Donaldson dubbed the proposal as "the next thing to ridiculous."

Martin Scraps 3-0-3

Martin 3 0-3, pressure-cabin version of the 2 0-2, has been abandoned by the Glenn L. Martin Co and work stopped on tests of components The 3-0-3 was similar to the 2 0-2 but varied in a longer, pressurized fuselage and a shorter wing span. This increased wing loading improved the maximum speed of the airplane but impaired its takeoff and en route climb performance.

United Air Lines and Northwest Airlines had ordered 3 0-3's with several other airlines placing tentative contracts Martin's reason is the success of the standard 2 0-2, which they say "has been received favorably by both airline operators and passengers, Thereby eliminating much of the need for the 3 0-3 version."

DC-6 Modification Schedule Set

Douglas to shoulder major cost of changes; CAB begins probe on Gallup fire.

Douglas Aircraft Co will bear the major share of the $3,000,000 to $4,000,000 cost of DC 6 modifications that will begin in accordance with a schedule aimed at putting a few of the high speed transports back into unrestricted operations for each airline by Feb 20

Schedule for returning the DC-6 to service is based on Douglas estimates of how soon it can design, make and install three sets of the critical parts required for each airline.

▶**Modification Schedule**—Modifications, of which 50 to 60 will be mandatory, have been broken down into four classifications to speed return of the airliners to service under restricted operating conditions.

Class A modifications will allow the planes to operate without cabin heaters

Class A 1 requires operations without thermal de-icing, cabin supercharger and cabin heaters It is unlikely that any airlines will operate their planes under these conditions during the winter season

Class B operations require cabin superchargers to be inoperative but allow use of cabin heaters and thermal de-icing equipment

Class C allows full use of all equipment restricted in Classes A and B

▶**Modification Lifted**—Among the major modifications already approved by a joint CAA industry committee studying the DC-6 problem

Wrap ducts in boiler room with best available fire resistant and oil resistant material suitable for protection of the duct from outside fire.

New high strength diaphragm for the fuel regulators, for the de-icer heaters.

Cabin and de-icer fuel system revised to accomplish fuel cut off outside the fuselage, elimination of fire travel from wing to fuselage and provision for shutting off all heater fuel coming into fuselage

Expansion of fire warning and fire suppression systems particularly in the center wing section.

Transfer and inspection openings between cabins and baggage compartments, boiler room and tail cone lights to be provided for illumination of these areas

Procedure to be developed and approved for fuel usage, fire fighting, and smoke evacuation from cockpit

Right and left hand inboard auxiliary fuel tank vents must be relocated on the inboard number 2 tank and number 3 alternate tanks must be blocked off

Provisions will be made to cut cabin heaters automatically if heated where it exceeds a safe value (about 600 degrees F) This must be positive making it impossible to override the shut off control.

Operators of the 146 DC-6's already manufactured will not have to fly their planes to the Douglas Santa Monica plant for modifications These can be done in airline shops in from 3 to 12 days work per plane, Douglas estimates

American Airlines announced that it will install a fibreglas escape chute to allow passengers to speed their exit from the DC-6 cabin It is estimated that the chute will allow 50 persons to slide from emergency exit to the ground in three minutes. Passengers aboard the American Airlines DC-6 that landed with its belly afire at Gallup N M complained that they had been detained unduly in the smoke filled cabin while one old lady hobbled down the only steps available

Opening of the CAB inquiry at Santa Monica into the Gallup fire confirmed earlier statements by Douglas, American Airlines and the CAA that the blaze was caused by fuel overflow from the No. 3 main tank feeding back from the No 3 alternate tank and travelling back under the fuselage into the cabin heater airscoop

▶**American Test Flight**—Test flight made by American Airlines, four days after the Gallup fire, was described by Harold Hoben, American's maintenance representative at Douglas Flight was made over the ocean while pumping a full No 4 fuel tank into a full No 3 tank with the booster pump in high speed position After emptying No 4 tank plane landed at Clover Field where overflow pattern showed fuel flow into cabin heater airscoop and into the boilerroom

This flight was made with all possible safety precautions including electrical circuits disconnected, cabin heater off and extra carbon dioxide bottles ready for use by observers aboard

CAA later duplicated the American flight test on the ground with colored water and obtained the same results

Wartime Procurement Still Investigated

A comprehensive investigation of wartime Air Forces procurement is on the agenda of a subcommittee of the House Committee on Expenditures in Executive Departments, headed by Rep George Bender (R., Ohio).

The Senate War Investigating Subcommittee, headed by Sen Homer Ferguson (R., Mich.), meanwhile, is continuing its evidence-gathering on aviation procurement.

▶**Approaches Differ**—The two groups have different approaches Senate subcommittee aims to develop evidence on "one or a few" cases of fraud or flagrant irregularities, similar to its case on Maj Gen Bennett Meyers House subcommittee contemplates a review of a maximum number of wartime aircraft contracts Senate group will not call open hearings until it has developed well-substantiated evidence in its closed door sessions the procedure followed in the Meyers case.

The Bender subcommittee, on the other hand, plans "exploratory" hearings to "develop" evidence, as well as raise the curtain on possible irregularities in the wartime aircraft program within the next month The group will scrutinize "in particular" contracts which were let for aircraft projects never completed during the war, including the Republic XF-12 and the Lockheed Constitution, which Howard Hughes called on the Ferguson subcommittee to investigate when it claimed that his XF11 plane failed to perform war service. Ferguson subcommittee turned thumbs down on the investigations requested by Hughes

▶**Will Study Gifts**—Bender subcommittee will complete its current hearings on wartime RFC policy on rental and lease of government-owned plants before launching its aircraft procurement hearings. The group intends to scrutinize in detail the procurement and contract termination activities of officers who subsequently became employes of aircraft firms, reports of fraternizing between procurement officials and war contractors, and personal gifts from contractors to procurement officials These practices have been vehemently denounced by General Accounting Office, which is collaborating with the Bender subcommittee in its aviation inquiry It is understood that the group is checking a report of a gift of a Cadillac to former Air Forces Commanding General H. H. Arnold in 1942 from a prominent aircraft manufacturer

The subcommittee is currently reviewing several GAO charges of overpayments to aircraft manufacturers, including a $650,000 overpayment to Consolidated Vultee, a $2,798 overpayment to Lockheed, and a $52,813 overpayment to Glenn L. Martin

Committee has list of all Navy and Army contract termination officers now working for firms they were terminating contracts for, as well as list of all former officers of AAF now working for aircraft companies

FLYING TEST BED FOR TURBOPROP

Closeup of Avro Lancaster bomber nose shows neat installation of Armstrong-Siddeley Mamba propjet engine installed for flight test research Axial flow design features 10 stages of compression and two turbine stages to produce a shaft thrust of 1,010 horsepower plus a jet thrust of 320 lbs. Jet exits from curved pipe below nose. This will be method of flight test of Curtiss-Wright propjet engine mounted in Boeing B 17 Flying Fortress nose

Urge Many Changes For National Air Races

Recommendations to limit the output of engines in racing planes used in next year's National Air Races at Cleveland will be presented to the contest board of the National Aeronautic Association by a technical committee named recently at Cleveland.

William V Gough, NACA engineer will head the committee, which has been asked to examine possibilities of limiting output by throttle stop, carburetor adjustment or other means Recommended limit is likely to be the military power rating of the engine

▶**March Meeting**—Contest board is not expected to meet until next March, allowing time for the technical committee's studies Cough's group was formed at a meeting of various organizations and firms interested in the National Air Races, called by Ben T. Franklin, general manager, and Charles Logsdon, NAA chief timer

Also represented were NACA, NAA Thompson Products, Air Force, Naval Air Service, Goodyear Tire & Rubber Co., Allison Division, General Motors Corp., and Bam Ecarius (Shorty) Fulton, Akron, chief judge.

Among other recommendations for next year's races

- Reduce number of starters in Thompson Trophy Race to 10, by qualifying trial speeds
- Install red and green flasher light in top of finish pylon, arranged to flash green light when leading plane begins last lap, and flashing both red and green light as signal of race finish
- Establish prizes for every opening day qualifier
- Change Goodyear Trophy Race course to pattern not yet determined. Increase number of Goodyear starters in each qualifying heat to eight
- Establish 30 mile course as nearly circular as possible, with six pylons, for jet plane Thompson Race, if this is held next year
- Retain 15 mile course for reciprocal Thompson Race
- Establish minimum altitude of 200 ft. for "big plane" races
- Establish field phones at each of the pylons for uninterrupted communication with timers stand in grandstand

Qualification trials for the 1948 National Air Races are scheduled to start Tuesday, Aug 31, and continue Wednesday and Thursday. Sept. 1 and 2 Goodyear representatives said advance indications were that the number of midget racers in the 1948 Goodyear Trophy Races would be considerably larger than in the first year running of the event

Dr. Goldstein Outlines Boundary Air Progress

Dr Sydney Goldstein, chairman of Britain's Aeronautical Research Council, revealed wartime research results on high speed laminar flow and suction airfoils in his 1947 Wright Brothers lecture of the Institute of the Aeronautical Sciences in Washington Dec 17. He offered new mathematical theory for the control of laminar flow transition and separation on both type airfoils and predicts a promising future for boundary layer control

By sucking away the boundary layer precisely at the point of laminar flow breakdown, Dr Goldstein believes engineers can not only greatly reduce drag but create lift coefficients many times higher than those presently attainable This system also permits the use of very thick (30 degrees thickness) wing sections, desirable for their high lift and stable moment characteristics, without paying the high drag penalty associated with such forms These sections would facilitate buried powerplant and roomy cabin designs for flying wing aircraft, for which they are particularly well suited.

Goldstein pointed out the ever increasing necessity for smooth wing surfaces in highspeed flight by revealing that common house fly bodies, adhering to a wing surface, can increase the wing drag as much as 100 percent and proposed paper covers for laminar flow wings which are shed at 5,000 ft, believed the maximum altitude of flies

Most promising boundary layer suction system is a porous wing material, such as sintered bronze, which would permit smooth, even evacuation of the boundary layer throughout the wing surface Major practical problem with this material is the clogging of the porous surfaces with dirt and grease

Failure of the suction equipment in flight poses serious problems yet to be solved but research is currently being directed towards the use of boundary layer control on conventional high speed sections which would retain adequate lift without suction

AVIATION CALENDAR

Jan. 7-8. National Aircraft Standards Committee, Eastern Division Washington, D C

Jan 12-16 Society of Automotive Engineers annual meeting Book Cadillac Detroit.

Jan 26-29 16th annual meeting, Institute of the Aeronautical Sciences Hotel Astor New York.

Jan. 26-30 American Institute of Electrical Engineers, Pittsburgh

Jan. 27. American Road Builders Association airport division Washington D C

Mar 30 ICAO personnel licensing division Montreal.

April 1-3. American Institute of Electrical Engineers Des Moines

INDUSTRY OBSERVER

▶ Grumman is now at work on a new contract for propeller-driven F8F Bearcat fighters that will continue this type in production throughout 1948 A total of 34 commercial Mallard amphibians has been delivered to private owners including Lord Beaverbrook, British newspaper publisher Grumman currently is overhauling some 60 Navy JRF Goose amphibians following hard wartime usage All plans for a Grumman personal aircraft program have been shelved indefinitely Although the 3 place Kitten has proved a rugged, dependable personal aircraft in constant use by Grumman executives, no further development is planned Already past design and in the engineering stage is the Grumman XF10F-1, faster than the newly announced F9F Panther fighter

▶ **Navy is buying 20 Lockheed P-80 Shooting Star fighters for use as transition trainers for its growing list of student jet pilots**

▶ First Lockheed XR 60—(Constitution) is not scheduled for delivery to Naval Air Station Patuxent for Navy flight tests until summer or early fall, 1948 with factory re-work of interior for passenger accommodations slated next spring Current interior is filled with flight instrumentation during the company flight test program now under way at Muroc Air Base, Calif Second Constitution, being finished with full passenger accommodations, is scheduled for first flight test April-May, 1948 Original production contract for P 80B Shooting Star is slated for completion in mid-February, 1948 with later models continuing in production throughout the year Newer models incorporate features proved on the P 80R racing model Current backlog of Constellation transports stands at 16 with 12 for Trans World Airlines, one for Aerovias Guest, S A and three for a foreign airline to be announced shortly Additional orders are now being negotiated with production scheduled to continue through 1948 and possibly into 1949

▶ **Convair may have its auto-plane in the air again this week for resumption of flight tests with a second fiberglass auto body replacing that destroyed in the November crash landing of the prototype.**

▶ Development and production contract for the Menasco XJ-37 turbojet engine, rated at 5000 lb in prototype form but scheduled for future development to a 10,000 lb output, has been delayed by tangled negotiations within the Air Force required for final execution of the contract Bids for the project, opened Nov 17, were entered by Allison, General Electric, Packard, Pratt & Whitney, Wright and Fairchild The giant engine was designed by Nathan C Price, Lockheed research engineer, and will bear the Lockheed name in conjunction with that of the final manufacturer Contract negotiations will not be completed until March 1948

▶ **Cessna, nearing a model change, has cut production to three planes a day—two 120-140s and one 190-195s The company now employs 1,000 at its Wichita and Hutchinson plants.**

▶ Air Force interest in replacement transports is expanding rapidly Survey teams during the past month have given particular attention to two-engine medium carriers, including Lockheed's "Saturn", Douglas' DC-9 designs, Martin's 2-0-2, and the Convair-Liner All designs in flying condition have been flown by the Air Force evaluation experts

▶ **Convair's guided missiles have reached the flight test stage. Static testing of these missiles is centered at Pt. Loma near San Diego with all flight testing confined to the Navy rocket test centers at Invokern and Point Mugu**

▶ Increased production costs have boosted prices of Hughes terrain clearance radar that Hughes Aircraft Co is selling to domestic airlines at cost New price for 24 v circuit is $217 36 with the 12 v model now selling for $259 30 Eastern Airlines recently placed an experimental order for the equipment

▶ **Air Transport Command's Pacific division has completed more than one billion passenger miles of scheduled flying without a passenger fatality.**

▶ A V Roe (Canada) Ltd expects completion for tests of its new turbojet engine, the Chinook, shortly after the first of the year Prototype is for test only with final version scheduled to be larger size Latter is for installation in Avro jet fighter for Royal Canadian Air Force

AVIATION WORLD NEWS

Australian Lines Feud Over Fare Increases

MELBOURNE—The war in the air has come back to Australia with a vengeance

It all started when the Department of Civil Aviation authorized an increase in fares by 20 per cent, effective Oct 20 Ansett Airways, a major private operator, refused to fall in line with its competitors It recalled with an accusing forefinger that the Commonwealth owned TAA had chiseled 20 per cent off its fares only a few months previously to show the man-in-the-booking office that he is being soaked by the private airlines

Safely established in business, TAA sought an increase in fares to the old level The DCA readily assented With passenger loadings dropping allround Ansett thought it would be better off undercutting TAA and ANA 20 per cent, to get, perhaps, 40 per cent more business

The DCA fumed and threatened, but there was no constitutional power to subjugate the recalcitrant airline Or was there? To Ansett's amazement, a regulation has been gazetted providing that airline operators whose charges differ from those approved by the DCA can be refused the use of Commonwealth airport facilities

Another storm is brewing over an official warning to cut extra and charter flights out altogether and to be prepared for a 20 per cent cut in gasoline allotments for regular flights At the same time, the government decreed that free transportation for members of Parliament can be provided only by TAA, the government airline To meet the heavy loads, TAA has to put in extra flights

Scandinavian Non-Sked Reports Are Misleading

STOCKHOLM—While air transport is practically the only means by which many kinds of goods are shipped in and out of the Scandinavian countries nowadays, reports of an enormous expansion of charter airline activities are distinctly misleading There are in fact only two companies regularly engaged in charter operations, one in Sweden serving mainly European points, the other a Norwegian concern concentrating on long distance flights to South America and the Far East

Significantly, both these successful companies are subsidiaries of shipping interests

The Swedish company, Skandinaviska Aero AB owned principally by Svenska Lloyd with the Svea Shipping Co participating, operates four DC 4?s, making an average of 3-4 outward flights weekly The fleet of the Norwegian line, SAFE (= South America and Far East), consists of four Skymasters and one Dakota. Owing to the long distances flown, operations are obviously much more irregular than the Swedish company's Back of SAFE are the Braathen shipping lines

A newcomer in the freight charter field is the Swedish T-flyg—AB Trafik Turist-Transportflyg What this company's prospects are, however, is difficult to say it has just started with one Bristol Freighter, and is possibly acquiring another One of its first flights will be to Abyssinia—which country is leaning heavily on Swedish know-how for its development

Noteworthy in regard to the new company however is that it is going in for bigger planes than those used hitherto The Freighter can carry about twice the load of the DC 4?s, and has an exceptional cubic capacity

Otherwise charter operations in the Scandinavian countries are mainly confined to taxi services, with a miscellaneous collection of Norseman, Crumman Fairchild, Cessna and Auster planes, as well as others Such has in fact hitherto been T-flyg's principal business

The reasons for this comparatively limited development are not far to find In the first place the markets to be served are small the population even of Sweden is only 6 5 millions—less than New York city—while Denmark and Norway have only 4 and 3 million inhabitants Also the distances between the main population centers are too short, and rail and road freights too competitive, for goods transport by air within Scandinavia to be profitable That only leaves exports and imports, most of which are too bulky to be suitable

A further possible explanation is that the regular airlines can take care of much of the high-value, non-bulky freight on their fixed schedules The Swedish ABA line runs a special nightly flight for freight only to Amsterdam, and has two DC 3 freight carriers available for charter Neither these nor the Danish DDL's four DC 4?s get much use, however

Nevertheless, certain goods are now shipped almost exclusively by air in and out of Scandinavia Interesting in this development is the fact that the business is largely handled by well-established shipping firms, with long experience in sea freights One such firm in Stockholm sends out regularly 12-1500 letters advertising booked flights

One Swedish manufacturer of cash registers ships all exports by air One reason this pays is that insurance rates, particularly against theft, are way lower by air at the moment than by rail—continental Europe is still in bad transportation shape

Obviously with the return of more stable conditions air freights, and with them charter services will increase though Chances are expensive things like Swiss watches, jewelry, Parisian perfumes, fashion models, etc as well as light goods such as gloves hats, ready-made clothing and even cloth will continue to be flown in as now—not to mention fresh fruit and spring flowers from the Riviera and Holland

BRITISH CARRIER FIGHTER

Rear view of the Westland Wyvern, Royal Navy 'strike" aircraft, reveals peculiar arrangement of flaps exteoded in below wing to avoid hot radiator turbulence The 3,500 hp Rolls Royce Eagle reciprocating engine permits low nose design improving pilot's vision Propeller is eight blade, constant speed, counter rotating Rotol design Mounts four 20 mm cannon and carries 20-in torpedo. Top speed is 455 mph and cruise 295. Weighs 5 tons empty, 11 tons fully loaded.

Dwindling Market Equity Values Key to Airline Finance Problems

Gradual decline since mid-1946 lowers some values as much as 88 percent, with Eastern and American showing greatest resistance.

Deteriorating financial fortunes of the airlines are reflected in the evaporating market equity values of the separate companies. No group of stocks have fared worse during the last year or so than the airline shares.

Viewing current prices with those prevailing almost two years ago, declines in market values range as high as 88 percent. The accompanying table indicates the extent of the individual losses. In virtually every case, the market pattern has been dictated by the respective financial and earnings position of the separate companies. For example, Eastern shows the lowest relative decline with a loss of some 52 percent. This is due to the inherent sound position of the company and its consistent earnings record. Eastern is one of the few carriers which is not faced currently with a financing problem.

▶**American Least**—American shows the least decline in number of points but is next to Eastern in percentage loss on the common stock. Up until recently, the company's earnings were considered consistently good. American is not now faced with an immediate financing problem but may well be sometime next year when payment will be made for the entire fleet of Convair-Liners now on order.

▶**Earnings Can Mount**—Airline shares also possess tremendous leverage. Once the break-even point in operations is attained, earnings can mount at a faster rate as load factors improve. Added to this, in many instances, is the leverage present in the pyramided capital structures. With bank loans bonds and preferred shares requiring but a fixed service payment in the form of interest or dividends all additional earnings become available for the common stock. It is because of this wide leverage, that fluctuations in airline shares are so extreme from one level to another.

Declining earnings turning into mounting deficits imposed a heavy burden on airline common stocks in leveraged capital structures. In effect, it is this junior equity which is called upon to support the senior capitalization. On the other hand, airline preferred stocks and debentures are equally vulnerable to the same influences but probably to a lesser extent. In this instance, one of the major considerations influencing price movements is the conversion feature. United Air Lines preferred is a good example. Convertible at the rate of four shares of common for each share of preferred, the senior issue rose to about 125 shortly after its issuance earlier this year. This price action merely gave effect to the market level of the common which sold as high as 28½. However, once the price of the common stock broke, the preferred became vulnerable to a sharp decline as well. While this senior issue resisted price depreciation around the 100 level, it ultimately gave way and in a few sharp breaks fell to around 82½. With the common selling around 17, the preferred's conversion value is only about 68. It is a fair surmise, however, that the United preferred is selling on a dividend yield basis (5.3 percent) comparable to that obtainable in other speculative industrial preferreds. This condition will continue as long as no default in maintaining dividend payments appears imminent. Once such default does occur, it is difficult to ascertain the full extent of the ultimate decline to come.

▶**Equities Up**—Currently, most airline equities are up only slightly from their recent lows. It is probable that they have been unusually depressed recently due to tax selling. The airline group represented one of the primary industries where losses could be established for tax purposes.

It is interesting to observe the capital conservation in airline investments that could have been made by the proper shifting of commitments at the right time. For example, the sale of Braniff and Chicago & Southern and transfer to Eastern, would have not avoided any market declines but would have greatly minimized such losses. In a similar measure, if at their respective peak prices, one share of TWA was exchanged for four of American, such an investment at current levels would be worth approximately $28 as contrasted to $13.50 if such a transfer had not been made. It is noteworthy that while at one time, United's common sold at almost twice that of Eastern, the latter is currently selling at a few points higher than the former.

▶**Same Price**—It is remarkable that American, Braniff, Colonial, National, Pan American and Western are currently all selling in the same approximate market price range. There is no assurance, however, that there will be any uniform price action in the market moves to come. Moreover, previous peak prices can hardly serve as a criterion of the distance to be retraced.

In all instances, the subsequent market action of the individual airline equities will be dictated by the future outlook as influenced by management, changed route structures, airmail compensation and other factors. It is a safe premise to conclude that this market action will discount and anticipate changes for better or worse long before the actual event.—Selig Altschul

Market Action

Listed Air Transport Common Stocks

	Bull Market Peak	1947 Low*	Point Decline	% Decline
American	19⅜	7	12⅜	62%
Braniff	37½	7½	30½	82
Chicago & So.	35½	4½	30½	85
Colonial	45	7	38	85
Eastern	33½	16	17½	52
National	41⅛	8½	33½	80
Northeast	25½	3	22½	88
Northwest	63½	11	52½	83
Pan American	29	8½	20½	72
PCA	49½	5⅞	43⅞	88
TWA	79	13½	65½	83
United	62½	15½	47	75
Western	40½	5½	34½	85

Note * Up to December 10, 1947

Bell's new two-place helicopter, the Model 47.

Bell, Sikorsky Explore Market With New Two-Place Helicopters

Revised version of Model 47 already being produced and delivered, while S-52, with all-metal rotor blades, going into production in 1948.

Cautious exploration of the helicopter market for both industrial and passenger uses is being continued by the nation's two leading rotorcraft producers, Bell Aircraft Corp., and Sikorsky Aircraft division of United Aircraft Corp., which have each obtained certification of new two place models.

Bell is already in production on and has delivered one Model 47D, a modified and improved version of its basic Model 47, while Sikorsky is planning production in the forthcoming year of the S-52. This is Sikorsky's first two-place commercial helicopter and the company has disclosed neither extent of planned production nor tentative price.

Three S-52s have been built to date, two flying models and one for static testing. The craft was first announced a year ago at the National Aircraft Show and just about a year was put into testing before it was NC'd. Sikorsky says it has several inquiries, but has not even attempted sales efforts.

▶**S-52 Description**—The S-52 displayed at the Aircraft Show and recently certificated appears tailored for passenger use and—if such a market were shown to exist—for personal ownership. Undoubtedly it will be modified for industrial purposes. A cabin type, it has side-by-side seating, rotor diameter of 32 ft. and employs the first all-metal blades. Gross weight is 1,900 lb., 150 lb. greater than estimates announced last year, and range is 265 mi. With a Franklin 178 hp. engine, its cruising speed is 87 mph., slightly less than originally estimated.

Sikorsky declines to predict what kind of market the S-52 will find, but sales will be handled by the company, as with the four-place S-51. By mid-December, Sikorsky had sold about 30 S-51s domestically and almost as many in export.

▶**Bell Plans**—Bell, on the other hand, is shooting mainly for the industrial market with the Model 47D, just as it did with that helicopter's predecessor. Powered by the same engine as the 47B, a Franklin 178 hp., the D model differs in appearance chiefly in its convertible canopy over the cockpit. The cockpit can be covered with a full bubble canopy with doors attached, or the doors and upper portion of the canopy can be quickly detached.

The 47D is Bell's fourth commercial model. The 47C was never put into production, being principally a flying test bed for the improvements which have gone into the D. Bell has added 50 lb. to the gross weight of the Model B, bringing the Model D's gross to 2,200 lb. and raising the useful load from 594 lb. to 718 lb. Service ceiling has been increased 100 ft. to 11,500 ft. and hovering ceiling in ground effect, boosted from 4,900 ft. to 5,400 ft. Cruising speed remains at 85 mph. with a maximum speed, now 92 mph., slightly below the top of the Model 47B.

Bell's sales effort on the 47D will continue through dealers as it has in the past. The first new craft delivered went to Armstrong-Flint Helicopter Co., Burbank, Calif., a Bell dealer which has had notable success in employing rotorcraft in a variety of applications.

Petroleum Industry Has New Gas for Military Planes

Aviation gasoline designated as 115/145 grade already tested and accepted by the Air Force for use on newer type planes, has been announced by the American Petroleum Institute.

Credited with adding as much as 15 percent to the power, speed, and range of planes equipped with the latest design reciprocating engines, it is said to be approximately as superior to 100 octane (100/130 grade) fuel, as is premium grade motor gasoline over regular grade.

The new fuel was developed toward the end of the war and was originally intended for use on B-29s, but the war ended before that use materialized. The entire output of the new fuel, at present, is going to the armed services.

Sperry Enlarging Plant In Britain; Will Add Lab

(McGraw-Hill World News)

LONDON—Sperry Gyroscope Company Ltd. has nearly completed extensions to its factory at Brentford, Middlesex, which will add 20,000 sq. ft. of floor space bringing the total to 150,000 sq. ft. A large proportion of this additional space (12,000 sq. ft.) will be devoted to a new research laboratory.

To facilitate tests connected with the company's new radar engineering program, an antenna array will be erected on the roof of the new extension, which has had to be especially strengthened for the purpose.

The new facilities will also permit the company to re-open, early in January, its school for training civil and military personnel in the use and repair of the many Sperry aviation devices and instruments. During the war, Sperry carried on extensive instruction courses for American Air Force and R.A.F. technicians at the Government-built factory at Stonehouse which the company operated. The school has been shut down for the past two years. Already a large number of applications have been received from British and foreign airlines for resuming these instruction courses.

GRUMMAN PANTHER CLOSEUPS REVEAL DESIGN FEATURES

Detail ground photos of Grumman XF9F-2 reveal special features of the new standard Navy carrier jet fighter. Closeup at left shows removable nose sliding on special rails to permit access to electronic equipment and armament. Note airspeed pitot tube projecting from fin, "droop snoot" nose flaps preventing conventional wing leading edge installation. Antenna is fully enclosed in plastic panels atop fin. Short, simple landing gear is located entirely within wing centersection. Photo at right reveals retracted deck arrester gear under jet tailpipe. Gear contains self-freeing equipment making it unnecessary for crewmen to risk jet blast to free hook from carrier deck arresting cables. Note split rudder to permit elevator required range of movement. Heavy root fillets required to smooth flow around jet air intakes in leading edge.

Boeing Names New Engineer Service Head

Boeing Aircraft Co. has appointed David A. Mowrer as head of all Engineering Service activities. He has been acting head of the department since last August, and was formerly chief service engineer.

Mowrer has been employed by Boeing since his graduation from the University of Michigan in 1935. He was associated as a designer on the XB-15, B-17E, and the Boeing Model 307 projects, he was later moved to the Service Department and had served there five years at the time of his appointment as department head.

Airo Gonnella, former assistant Chief Sales Engineer, has been named Assistant Chief Service Engineer and will aid Mowrer.

Henry T. Richmond has been appointed as group leader of the XB-47 project for the Boeing Service Department. He heads a three man service group which will work with the XB-47 through testing before Air Force acceptance.

In other personnel actions:

• **Electric Storage Battery Co.**, Philadelphia, Pa., appointed Conrad Connell supervisor of Exide Automotive Replacement Sales Division. He will assume his new duties Jan. 1. Connell fills the position vacated by Thos. G. Tynan, who was appointed assistant manager of Exide's Boston Branch.

• **The Nylok Corp.** appointed Lee N. Bruins Pacific Coast sales representative. Associated with him will be K. R. Jameson, former sales manager for Bendix Aviation Ltd. Together they will direct distribution of the company's self-locking fasteners.

• **Aircraft Radio Corporation** appointed Allan W. Parkes, Jr. head of the Field Engineering and Sales department. Parkes has been with A. R. C. since 1937, has recently handled all the company's sales and service of aircraft communication and navigation equipment.

• **General Electric Co.** appointed W. V. O'Brien as assistant general manager of sales; R. M. Darrin, manager of Central Station Divisions, succeeding O'Brien; J. C. Miller, assistant to the manager of sales; and H. P. Bish, manager of Aircraft Federal and Marine Divisions.

• **Scintilla Magneto Division**, Bendix Aviation Corp., appointed George M. Anger Western States Representative. Anger plans to make his headquarters in San Francisco.

• **Toledo Steel Products Company** appointed Hub Riley Eastern District Sales Manager. Riley has been with the company for the past 20 years.

• **The Carborundum Co.** of Niagara Falls appointed W. T. McCargo assistant Director of Sales in Charge of Operations in Western Region. McCargo was formerly Regional Sales Manager. John S. Howley, previously manager of the Commercial Research Department, as Assistant Director of Sales in the Central Region; John G. Fritzinger as Assistant Director of Sales in Eastern Region. He was formerly District Sales Manager of the company's branch at Philadelphia. R. B. Huntington to succeed Fritzinger as District Sales Manager at Philadelphia.

• **Sperry Gyroscope Co., Inc.** appointed William F. Horn manager of the Pacific Central District to succeed J. F. McConkey who has left the company. Horn joined the company in 1930 as a service engineer.

• **National Fermital Company** of Cleveland, Ohio, appointed Lauren L. McMaster as New York representative. His territory will include New York, New Jersey and Eastern Pennsylvania. McMaster was formerly with the Standard Pressed Steel Co.

• **Automobile Club of Buffalo**, appointed A. D. Palmer, Jr. editor and business manager of the Buffalo Motorist, club publication. Palmer was public relations director of the Curtiss-Wright Airplane Division for ten years.

Plane, Engine Exports Exceed $64 Million

Exports of complete aircraft and engines this year had a total value of approximately $64,000,000 at the end of September, according to a tabulation of the Aircraft Industries Association from Bureau of the Census figures. Aircraft sent out of the country numbered 2,425 for the year to Sept. 30, and engines 3,258. September exports showed an increase in numbers and value for aircraft, while engine, both numerically and in value, decreased.

In a separate statement, AfA reported October export shipments of personal planes numbered 117 valued at $423,845. This brings export sales of the 12 leading personal aircraft companies for the first ten months to 1,357 carrying a value of $5,636,482. In both categories this is far above shipments for the corresponding period of 1946.

For the first ten months, export shipments of lightplanes were 9.4 per cent of total production and 11.8 per cent of the value of total production indicating a steady increase in export sales. October ratios were 13.6 percent of that month's total output, and 16.2 percent of the value of that production. For the first time—in value, at least—the industry has exceeded its self imposed "ideal" of 15 percent of production for export.

On October, best foreign customer for personal planes was Argentina, importing 52 valued at $142,640. Brazil followed with 14 planes worth $35,880. However, India, Mexico and Chile while all importing fewer planes than Brazil, exceeded the latter country's payment. India paid $67,716 for 10 planes, Mexico $43,818 for eight, and Chile, $38,961 for 5 aircraft.

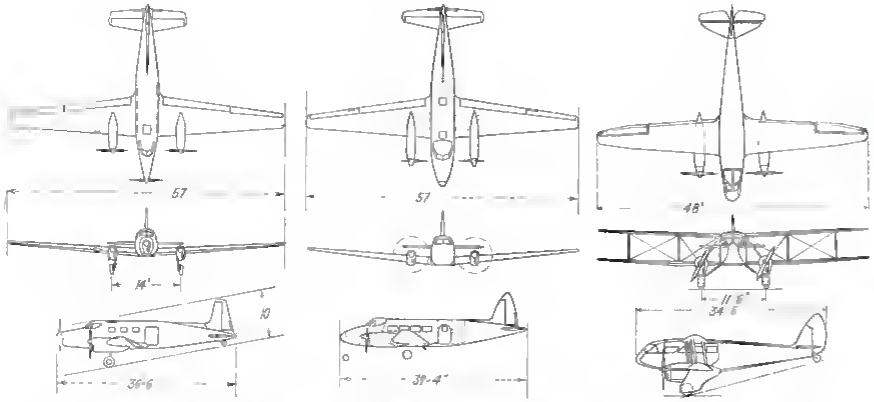
Because of dollar restrictions, payments by a country in any one month do not necessarily indicate the amount of aviation sales activity in that month as often an importer must wait considerable time until his national bank makes dollars available.

Boeing Develops New Ducting of Fiberglas

Plastic air ducts made of Fiberglas impregnated with resin have been developed by Boeing for use on the Stratocruiser and YC-97B, and to a lesser extent on the B-50.

These plastic ducts are one piece installations thus eliminating riveting and welding. They are lighter, and have proven under test, that they are more durable than their metal counterparts.

New ducts permit a more efficient system design because the ducts can be made in virtually any shape without consideration for the usual manufacturing problems present with metal installations.



Drawings show contours and dimensions of three British feederliners (1 to r) the Drover, the Dove, and the Dragon Rapide

Three-Engine Design Wins Favor

Australians Latest to Adopt Configuration for 'Bush' Operations With New de Haviland Drover Based on Two Earlier DH Craft.

The Australian unit of the de Havilland Enterprise is working on prototype of a three engine design (DHA 3, Drover) incorporating features of the well known de Havilland Dove and the performance of the earlier Dragon Rapide in an attempt to produce an aircraft that will fill the needs of Australian airlines which operate over rugged terrain.

Need for a third engine was indicated by postwar safety legislation in Australia requiring additional rate of climb for operation of multi-engine planes with one engine dead. This performance was not available in the Rapides formerly used to fly these routes. The Drover is one of a few postwar three engine designs in the world, a more notable example being Northrop's Pioneer.

Design details now under consideration are aimed at overcoming some of the serious drawbacks found in earlier tri-motor planes and include changes in engine mounts to prevent excessive vibration and heat entering the cockpit and redesign of the nose cowling to correct inflow tendencies and prevent oil leakage over the windshield and main access door.

► **Dove Design**—As far as was possible the original design of the Dove was retained. Changes made were for the purpose of adapting the plane to specific problems of Australian operation.

The Drover will be metal stressed skin throughout. The undercarriage will be non retractable. Neither hydraulic nor pneumatic services will be used in the airplane although brakes will be hydraulic without power assist.

A tricycle landing gear was considered and then discarded in favor of the added payload and ground clearance available with the conventional type tail wheel.

	Dove	Drover	Dragon Rapide
Type	4-place monoplane	3-Engine monoplane	8-Engine biplane
Fuselage	Stressed skin monocoque	Stressed skin monocoque	Box type plywood
Landing gear	Tricycle retractable	Conventional fixed	Conventional fixed
Engines	330 hp DH Gypsy Queens	145 hp Gypsy Major 8s	200 hp Gypsy Vis
Propellers	DH hydromatic reversible	Electric V P	Fixed pitch
Span	57 ft	57 ft	48 ft.
Length	39 ft. 4 in	38 ft	34 ft. 6 in
Height	13 ft	NA*	10 ft. 3 in
Wing Area	345 sq. ft	324 sq. ft	348 sq. ft
Empty Weight	5,662 lb	4,980 lb	4,250 lb
Gross Weight	8,000 lb	6,850 lb	5,500 lb.
High Speed	203 mph	NA*	137 mph
Cruising Speed	180 mph	135 mph **	122 mph
Range (still air)	500 mi	500 mi **	550 mi
Climb (sea level)	750 ft /min	800 ft /min **	1 000 ft./min

*Figures not available
**Estimated

DH 89A, Dragon Rapide, prewar versatile short haul feederliner which is being used as a performance yardstick by de Havilland designers for the proposed DHA 3 (Drover)

Greater Turbojet Fuel Economy Object of New West Coast Design

After extensive engineering studies, John Hawkins and Associates formulating plans for engine giving hope of substantial operational gains.

Backed by many thousand man hours of engineering study, a new turbojet design—the JHARL 6000XA—with major objectives of reliability, fuel economy and ease of maintenance and manufacture is being formulated by John Hawkins & Associates at North Hollywood, Cal.

The engine cycle employs a compression ratio of approximately six to one and a peak combustion temperature of about 1,300 deg F. Turbine peak inlet temperature is held to 1,250 deg F at sea level, with necessarily lower temperatures at altitude.

▶ **Major Assemblies**—The design embodies five major components—entrance diffuser and accessory section, compressor, burner, turbine, and exhaust nozzle. Circumferential joints are provided for these units to afford convenient individual handling of sections in manufacturing and service.

▶ **Diffuser and Accessories**—Nose fairing of the compressor hub, approximately 38 in. long and 26 in. in diameter at the base, comprises the engine accessory section. Powered accessories are, in general, direct-driven at 3,500 rpm. from the front end of the compressor shaft and are supported from the compressor front bearing housing-support structure.

▶ **Compressor**—This is a conventional eight-stage axial-flow unit. Mean angle at design radius of both rotor and stator blades is 45 deg. The blading occupies only the outer 30 percent of the disk, to preclude the necessity of any blade section working far from optimum pitch.

The forged blades (both stator and rotor) have rectangular base plates curved to form portions of the air passage wall. Adjacent rows of blading are spaced by rings which also serve as blade locks via circumferential tongue and groove joint between the rings and blade bases.

Both casing and rotor are of the drum type, constructed without longitudinal joints to avoid unsymmetrical distortion under pressure, thus permitting closer running clearances.

Because of the comparatively small portion of the compressor disk diameter occupied by the blades, these latter units have practically constant chord, camber, and angle of attack over their entire length. Advantage is taken of this feature and of the blade mounting provision to make rotor blades from one rough forging and stator blades from another, by merely cutting the blade to the length appropriate for any particular stage. This simplifies manufacturing and procurement problems.

▶ **Burner Section**—Air leaving the compressor is led through an annular duct as far as the turbine flete, air flow is reversed by passing around a 180-deg bend and into another annular duct, the outer wall of the second duct being formed by the inner wall of the first. Fuel injection nozzles are located immediately downstream of the bend in a high heat area but not subject to direct flame. Approximately half way back from the turbine to the compressor, the airflow is again reversed into a third annular duct located inside the second duct and leading to the turbine entrance. The third duct has a number of radial fins which act as a flame grid.

This construction results in a number of advantages. The pressure-loaded outer shell of the burner section is insulated from the combustion chamber proper by two walls and two moving streams of air, thus minimizing the danger of burnout. This protection is gained without the necessity of reducing the capacity of the engine by bypassing air around the combustion chamber proper. Also, heat leaving the combustion chamber by conduction and radiation is automatically returned to the working gas rather than being lost in cooling an ir outside air.

With this type of burner installation it is possible to have the mass move in a downward direction. This feature could be considered important in a reversible flow system, because the flow path could assist considerably in the reduction of those losses which could be expected to occur at the elbows.

Inside the outer annular air passage and between the compressor and the combustion chamber-annulus is a planetary gear set acting as a speed reducer between turbine and compressor. The gearing permits both compressor and turbine to operate under absolute optimum conditions. The gear chamber is insulated from both the outer annulus and the combustion-chamber annulus, and is cooled by air bled from the first few stages of the compressor. This air is also used to cool the aft compressor bearing and both the forward and aft turbine bearings.

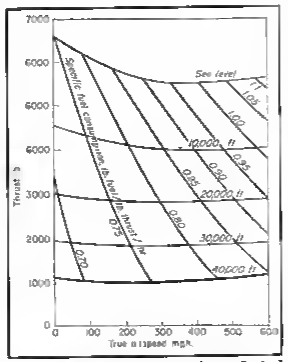
▶ **Turbine**—The turbine is a conventional four-stage reaction unit, turning at a design speed of 5,833 rpm., or 5/3 compressor speed. Except for its smaller size and smaller number of stages, it is similar to the compressor, hence possesses the same mechanical characteristics.

▶ **Exhaust Nozzle**—Since the jet velocities never exceed the speed of sound at jet temperature, the nozzle is a simple convergent unit of conventional design. No provisions are made for varying the nozzle area in flight.

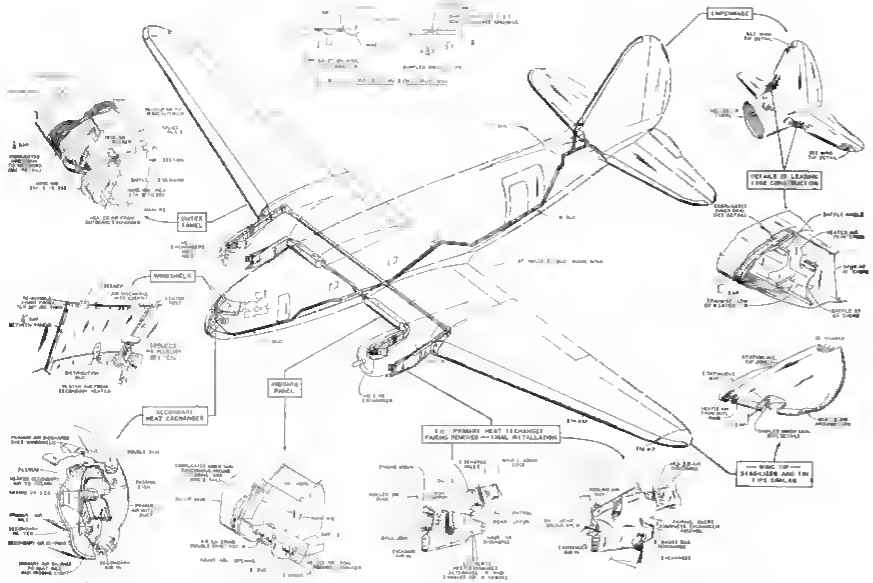
▶ **Bearings**—The engine employs four shaft bearings, two each in the compressor and turbine. They are all ball or roller bearings, and are provided with positive-pressure drop-feed lubrication and forced air cooling. End thrust of the turbine and compressor rotors are carried by only one of the bearings in the unit, the second bearing being free to move upon the shaft to preclude overloading by differential expansion of rotor and casing. For similar reasons the shaft joining the turbine and compressor is provided with a splined joint permitting some misalignment and considerable axial motion.

▶ **Materials**—With exception of certain details such as bearings and gears, the engine is constructed of high alloy heat corrosion resisting steels, in the form of forgings and wrought sheet and plate. No castings are used in the major structure of the engine.

▶ **Installation Details**—Overall length is 144 in., major diameter, 40 in. Mounting points consist of two trunnion pairs approximately 80 in. apart, carrying approximately equal weights. Engine weight (including accessories) is 1,200 lb.



Calculated values of thrust and specific fuel consumption from sea level to 40,000 ft for JHARL 6000XA turbojet at 3,500 rpm



This layout of the C-46 used in NACA experiments shows for the first time the complete thermal anti-icing system

NACA Research Ends Ice Hazard

Award of Robert J. Collier Trophy to Committee engineer caps 20-year effort to prevent ice formation on any part of plane.

By ROBERT McLAREN

Award of the Robert J. Collier Trophy for 1946 to Lewis A. Rodert, NACA flight research engineer, for his pioneering work in aircraft ice prevention recognizes tangible results from two decades of work on the subject by the National Advisory Committee for Aeronautics and signifies that ice has been virtually eliminated as a major menace to air transportation.

The present NACA system of aircraft ice protection has demonstrated that the modern airplane can be flown through the worst icing conditions yet recorded with invulnerability. Award of the Trophy to Rodert, his staff and NACA marks this achievement as one of the most significant in the history of flight.

Since World War I ice has constituted one of the major operational problems of the airplane. Among the dangers of ice formation on aircraft are:

• **Weight**—Ice builds up quickly on the airplane surfaces and the weight of thick accretions is great enough not only to prevent the airplane from climbing to a higher altitude but to actually force it down through failure to sustain the increased weight in level flight.

• **Change of Surface Shape**—Rime ice, which forms in rough shapes, completely changes the aerodynamic configuration of the wing, tail surfaces and propeller blades of the airplane and thus impairs lift and builds up drag further impeding the airplane's flight ability.

• **Scaling of Controls**—Ice formations in the slots between control surfaces and then parent surfaces impair or prevent movement of the controls, resulting in loss of control of the airplane.

• **Induction System Clogging**—Ice formations in carburetors, air inlet systems and internal ducting to superchargers choke off the supply of air resulting in engine failure and emergency landings.

• **Propeller Vibration**—Ice formations on propeller blades result in imbalance of the assembly and consequent severe vibration and failure of the propeller. Ice being thrown from rapidly spinning propeller tips constitutes a menace to other parts of the airplane.

• **Windshield Blackout**—Impaired and completely blacked out visibility can occur through clear ice formations on windshield and transparent panels on the flight deck.

• **Instrument Error**—An ice-clogged pitot-static tube produces erroneous airspeed readings, even more dangerous than a completely blocked airspeed head.

• **Communication Interference**—Ice formations on antenna wires and masts can overload them and carry them away from the airplane, leaving the latter without communication at a time when it is most needed.

▶ **Began in 1928**—To solve these problems, NACA began research as early as 1928 at its Langley Memorial Aeronautical Laboratory in what is believed to have been the first icing research tunnel. First attempt was the use of water-soluble compounds, such as glycerin, honey, soap (even Karo syrup) coated on an airfoil surface. Greases and oils were tried to provide lubricity to the surface. Test results indicate the efficacy of these fluids but the large quantities required together with the problem of their continued application proved the system impractical.

It was about this time (1930) that the idea of thermal anti-icing was proposed and NACA is believed to have been the first to recognize this system and to commence systematic wind tunnel and flight tests. This work, under the direction of Dr. Theodore Theodorsen, comprised a comprehensive attack on the problem. First step was an analysis of the heat transmission of an airfoil and these wind tunnel studies showed that transmission varied directly with airspeed and followed closely the pressure distribution of the airfoil.

▶ **Flight Investigation**—Second step was a flight investigation. This consisted of a small airfoil, 4 ft. chord and 2 ft. span mounted on a Fairchild 71 cabin monoplane. A small boiler located in the engine exhaust manifold, a steam line to the airfoil and a water spray bar ahead of the airfoil comprised the icing and heating system.

The airplane was flown at various altitudes in temperatures as low as 18° F. These tests showed, as early as 1931, that the heat of an aircraft engine exhaust was ample to provide thermal anti-icing for the aircraft. They further established that only the forward portion of the chord need be heated to provide icing protection for the whole surface.

The tests were continued with a more elaborate installation on a Martin BM-1 dive bomber loaned by the Navy in 1933. First airplane to incorporate a thermal anti-icing system within its wing was the Fairchild XC-31, a large, single engine transport loaned to NACA by the Army in 1935, and modified especially for the program.

▶ **Rodert Takes Over**—Lewis Rodert joined the NACA in September, 1936 and became interested in the problem of aircraft icing shortly thereafter. Work on a thermal anti-icing system continued but manifold problems presented themselves as the work progressed.

Previous work had been with fabric-covered aircraft wings and the installation of a complete system in an aircraft had to await the appearance of the all-metal transport. One of the earliest of these in quantity production was the Lockheed 12A, a twin engine light transport, one of which the NACA obtained for its icing research program.

Although tests on a Consolidated PBY Catalina flying boat had proved that direct engine exhaust heating could be used for the wing leading edge, it became apparent that the fire hazard, the corrosive action of the exhaust and the special materials required in the wing leading edge rendered this system unpractical for widespread installation.

Rodert and his staff devised a basic system built around a heat exchanger in which air is drawn in from the atmosphere through tubes which are heated by the engine exhaust gases which pass through the exchanger and directly out the exhaust manifold. The hot air within the tubes is then routed out along the wing leading edge and exhausted near the tip.

▶ **Developed Heat Exchangers**—Rodert and his group quickly ran into difficulty with the fact that there existed no commercial heat exchangers capable of extracting the large quantities of heat required. The result opened Ames Aeronautical Laboratory was enlisted in the project and, following extensive research and with the cooperation of several manufacturers, developed heat exchangers capable of producing up to 300,000 B.T.U. per hour.

Flight tests on the special Lockheed 12A were carried out during the winters of 1939-40 and 1940-41, as well as during the summer months on occasion and valuable design data were obtained. After Pearl Harbor, Rodert's work became even more important when the Army Air Forces requested the development of thermal anti-icing systems for bombers. Accordingly, Rodert's group developed special systems for the Consolidated B-24 Liberator, the Boeing B-17 Flying Fortress and the North American B-25 Mitchell bomber, all of which proved successful and saved numerous lives which might otherwise have been lost due to icing.

(While the U. S. was the first nation to press research on the anti-ice elimination systems for aircraft, Germany was the first nation to recognize its importance to military operation. Germany was the first country in the world to utilize a thermal ice prevention system on production aircraft, and this system was standard equipment on production JU 52, JU 88, JU 188, JU 388 and the four engined JU 290 which bombers all used throughout World War II.)

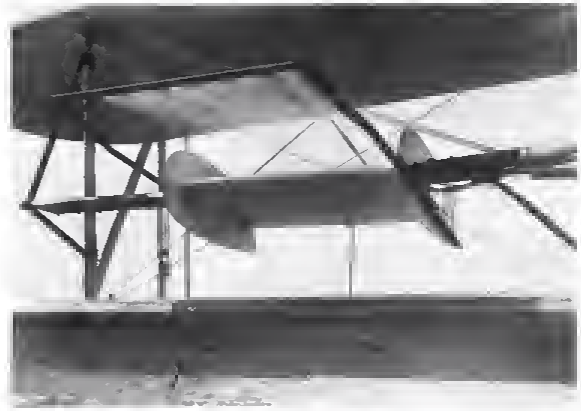
In addition attention was devoted to windshield, empennage and propeller icing and the completion of the world's largest icing research tunnel at the Cleveland Laboratory permitted a broad expansion of the program and the testing under icing conditions of complete aircraft minus wings, including new jet types.

▶ **Equipped Commando**—Following the accumulation of a tremendous quantity of data on anti-icing equipment, Rodert assembled all of the available informa-

First flight investigation of ice prevention was conducted with the small airfoil section carried on this Fairchild F-71. Pipe through the section carried steam to heat it, while the bar ahead sprayed water to induce ice. Tests showed feasibility of thermal system.

(Editor's Note: Our engineering staff has prepared a comprehensive bibliography of aircraft icing research. If you desire a copy of this bibliography simply drop a card to AVIATION WEEK, National Press Building, Washington 4, D. C.)

Second series of NACA tests were carried on with this Martin BM 1 Navy dive bomber carrying more elaborate installation than the Fairchild. Position of model airfoil and testing is shown above, while below is close-up flight shot of same installation with the water spray turned on Visible at right is pipe carrying warm air from heater within the airplane



tion into a specially modified Curtiss C-46 Commando transport in the Fall of 1944. This was the most complete icing research airplane ever flown Object of the tests, in addition to investigating the various items of equipment, was to obtain basic research data on icing conditions in the atmosphere

The airplane was flown throughout the winter of 1944-45 and various modifications made as a result The tests were repeated the following winter and more changes and new equipment added Final test of the system was made last winter when the transport was flown in complete safety through the worst icing conditions ever recorded, and invaluable research data obtained These tests were made with the cooperation of the Army Air Forces, and the airlines, who provided the airplane, flight and ground crews as required

As an example of the modern ice-resistant multi-engine aircraft, the NACA Curtiss C-46 contains the following:

• **Hot Wing**—Four heat exchangers are mounted, the two outer units supplying the outer wing panels, the two inner units supplying the inner wing panel, the windshield and the tail These heat exchangers are of the flat plate type, rather than conventional tubes, with the air and exhaust separated by flat plates. The wing leading edge has a double skin separated by a corrugated inner skin with corrugations running chordwise

The heated air is conducted outboard along the inner skin and flows through holes forward and down along the corrugations until a ⅞ in. gap at the leading edge is reached. At this point it flows out into the outer skin and is conducted around the nose and back into the interior of the wing. Only the forward 10% of the chord is equipped with this special construction Discharge orifices are located along the ailerons to provide exterior heating for the aileron leading edges

The horizontal and vertical stabilizer systems are similar but feature only an inner corrugation and an outer skin. The heat is supplied through a six inch duct extending aft along the fuselage belly The heated air continues completely around the tips

• **Heated Windshield**—Two systems are used on the windshields, the first one tested being a hot air system with the heat furnished by the heat exchangers through a four inch duct extending forward to the extreme nose of the airplane. Here a secondary heat exchanger is mounted to provide warm air for the cockpit The primary air continues through the heat exchanger and up through the double-paned windshield through a ¾ in gap The air is then vented into the cockpit for additional heat for the crew

Another highly successful system is NESA, a special electrically conducting salt baked into the windshield glass. Although completely transparent, the special panels may be heated by simple resistance from a source of current wired into the windshield.

• **Hot Props**—Two systems have also been developed by NACA for propeller anti-icing Hot air is introduced through a gap at the hub and is drawn out along the hollow leading edge and exits at the trailing edge through a nozzle provided Flight tests proved that the propeller could remain ice-free in even severe icing conditions, using this system

Other system utilizes electrical resistance wiring buried in special rubber coatings on the blades Also developed by NACA is an electrical resistance system with the wires contained on the interior of the blade which has the additional merit of preserving the blade sections as manufactured

▶ **Program Continuing**—The NACA icing research program is continuing with special emphasis on the analysis of atmospheric conditions generating ice formation Successful development of an ice free aircraft has permitted greater freedom for research in ice-forming air conditions and has, therefore, permitted an expansion of this program.

Work is continuing in connection with these tests with research on the various detail items of the NACA icing system to provide further improvements. A new phase of the program is the investigation of icing problems on jet aircraft and substantial progress has already been made

These Janitrols range in size from a 15,000 Btu unit to models with capacities in excess of 300,000 Btu's per hour. Typical installations include

DC-6 DC-4M2	CONSTELLATION 649	DC-3, C-74, 383	DC-4, DC-4M1, C-48	CONSTELLATIONS 649-749	F-40-S, P-51, SB-2C	DC-4, C-54, DC-4M1	P-51, TBM F-7F

EACH of the Janitrol Whirling Flame Heaters you see above was designed for some particular size and type of plane. Each plane has different performance standards. Each requires different heater control combinations to attain the highest heating efficiency under varied altitudes, plane speeds and flying conditions.

In designing various adaptations of one basic heating principle . . the Whirling Flame . . by originating such developments as fuel pressure regulation, the fuel injection system and the use of spark ignition . . Surface Combustion engineers have answered very nearly every practical heating requirement of modern aircraft transportation.

This knowledge and experience has resulted in building up the Janitrol standard aircraft heater line—to provide dependable heat at low maintenance cost for any plane now in service.

The interchangeability of Janitrol service parts and control assemblies simplifies service work and the stocking of parts for maintenance. These are added reasons why so many of the major airlines and airframe manufacturers use Janitrols exclusively.

SEALED CONTROL CANNISTERS

Dual type is used with S-300 heater for Douglas DC-6, contains dual fuel controls, fuel valves, air loaded fuel regulators, fuel filters, fuel pressure transmitter. All packaged and completely sealed. Dual unit weighs 23 lbs., single unit 11 lbs., either unit can be used with any heater.

Many new planes now in development and test stages will be Janitrol equipped.

Janitrol

AIRCRAFT and AUTOMOTIVE HEATERS
with the whirling flame

AIRCRAFT-AUTOMOTIVE DIVISION • SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO

SHEET NUMBER D-43
CLASSIFICATION Materials
SUB CLASSIFICATION Aircraft Steels

In the light of current information on characteristics of aircraft steels the designer can now feel confident that a suitable combination of properties can be developed which will most nearly meet his needs. The accompanying tabulation lists principal applications and grades of alloy steels used in the aircraft industry, indicates tensile strength range, and outlines the proper heat treatment data.

Selecting the proper steel from a strictly metallurgical point of view should not be too difficult. This, however, is seldom feasible because available equipment and overall economy must also be considered. A special steel might give the exceptionally high strength desired yet necessitate special heat treating equipment and difficult machining practices whereas a standard high quality steel could be applied with only minor changes in heat treating practice and no change in the machining set-up if a slight change were made in the design of the part. Good design practice, therefore, would call for the use of the standard steel.

Principal Applications of Aircraft Alloy Steels

Applications	Sheet or Tubing Landing Gear Engine Frame	Cylinder Barrels		Crankshafts, Propeller Shafts, etc		Gears		Propeller Hubs	Master and Articulating Rods	Piston Pins	Crankcases	Landing Gear Forgings	Sheets, Plates	Piston Shafts and Pins, Bushings, Thrust Plates
Tensile Strength Range	75,000 to 175,000	125,000 to 160,000	140,000 to 170,000	140,000 to 170,000	150,000 to 200,000	150,000 to 200,000	150,000 to 240,000	140,000 to 180,000	140,000 to 200,000	150,000 to 200,000	140,000 to 170,000	180,000 to 200,000	150,000 to 170,000	140,000 to 170,000
Heat Treatment	1 Quenched and tempered. 2 Cold-finished with or without heat treating	Oil quenched and tempered	Quenched and tempered nitrided	Carburized and quenched and tempered	Oil quenched and tempered	(1) Carburize and oil quench, temper 275-325°F (2) Carburize and air or retarded cool reheat to 1450/1550 F., oil quench and temper 275/325°F	(1) (2)	Oil quenched and tempered	Oil quenched and tempered	Oil quenched and tempered	Oil quenched and tempered	Oil quenched and tempered	Normalized or quenched and tempered	Quenched and tempered nitrided case (.015") about 950°F
Ni				2515 3317 AMS 6242		2512-17 AMS 6240 AMS 6242	2517 AMS 6242							
Ni Cr				3310 AMS 6250	3140 AMS 6332		3310-16 AMS 6250 AMS 6253 Super Kore A		3140 AMS 6332	3310 AMS 6250				
Cr Mo	4130-35 4137 AMS 6361 AMS 6362 AMS 6460 AMS 6360 AMS 6365 AMS 6317 AMS 6368 AMS 6362 AMS 6352	4140 AMS 6395									4140 AMS 6382	4130 4137 AMS 6370 AMS 6380	4130 AMS 6350	
Ni Cr Mo	4337 AMS 6358				4337 4340 AMS 6412 AMS 6415			4337	4337 AMS 6412 4340 AMS 6412 AMS 6415			4337 4340 AMS 6412 AMS 6415		
Ni Mo						4620 AMS 6294	Super Kore B			4640 AMS 6312				
Cr V								AMS 6150 AMS 6448		AMS 6150 AMS 6448				
Ni Cr Mo	8630 AMS 6355 8735 AMS 6357	8740 AMS 6322		9310 AMS 6260		8615-17-20 AMS 6270 AMS 6272 AMS 6274	9315-15 AMS 6260 AMS 6262 Super Kore A			9310 AMS 6260	8740 AMS 6322 AMS 6324 8640 AMS 6324	8740 AMS 6322 AMS 6324 8640 AMS 6324	8630 AMS 6355	
Cr Mo Al			Nitralloy AMS 6470				Nitralloy AMS 6470							Nitralloy AMS 6470

NEW AVIATION PRODUCTS

New Tower Beacon

Designed to minimize moisture and excessive heat to reduce lamp burnout, new "Guardian" tower light is manufactured by **Hughey & Phillips**, 326 North La Cienega Boulevard, Los Angeles 36, Cal. Ventilator dome with specially designed air vents is stated to

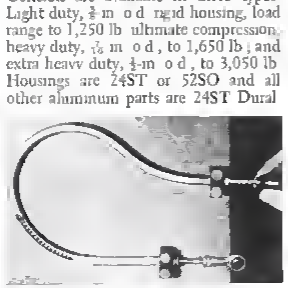
provide effective escape for heat generated by two 500w beacon lamps. As hot air escapes, suction is created bringing in cool air from outside, giving substantially lower temperature within unit. Construction is claimed to prevent water from entering beacon even during severe rainstorms and condensation resulting from changes of temperature is dissipated via concave base having bottom drainage port. At beacon center, concealed hinge with recessed Neoprene gasket prevents entry of dirt or moisture. Frequency of color screen breakage, usually caused by uneven expansion and contraction between screens and encircling metal holders is reduced by use of spun glass shielding.

"Packaged" Welder

Known as Weldomatic, complete package of automatic welding equipment, including welding head, controls, transformer, and work positioning equipment is offered by **Westinghouse Electric Corp.**, P.O. Box 868, Pittsburgh 30, Pa. Standard head, suitable for welding with a.c. or d.c., operates with capacity of 1,200 amp., a.c., with special nozzles available for 2,000 amp. a.c. Capacity for d.c. welding is 800 amp. Head can be rotated 360 deg. in vertical or horizontal plane, hence can be mounted in any position. Nozzles and knurled drive wire feed rolls are supplied to accommodate ⅛, 5/32, 3/16, and ¼-in. wire diameter. Wire feed is automatic. Speed of driving motor is controlled by burnoff rate of wire through bridge hookup consisting of arc voltage control generator field, and potentiometer. Motor-generator set is driven by a 2-hp., 220/440v., 3-phase, 60c a.c. motor. Two pole constant potential generator supplies control current and 2-pole variable voltage generator supplies current to driving motor in head. Control equipment for starting and stopping arc and traverse mechanism, as well as adjustment for arc length, is mounted on operator's panel. Work positioning equipment is supplied as needed for job from semi-standard designs of travel carriages, mounting pedestal, rotator, positioner, and rolls.

Flexible Push-Pull Controls

Manual remote control of mechanical and hydraulic devices is provided by new push-pull device made by **Southwest Products Co.**, Pasadena, Cal. Moving element comprises flexible tinned aircraft cable over which series of steel spherical shells are strung. Standard "O" rings seal both ends. Controls are available in three types. Light duty, ⅜-in. o.d. rigid housing, load range to 1,250 lb. ultimate compression; heavy duty, ½-in. o.d., to 1,650 lb.; and extra heavy duty, ¾-in. o.d., to 3,050 lb. Housings are 24ST or 52SO and all other aluminum parts are 24ST Dural.



Flexible housings are also available. Two-inch bend radius allows ease of installation, and minimum radius as low as ¾ in. may be had for special applications. Stainless steel parts are offered for high temperature operations.

Transparent-Plastic Cleaner

Created specially for aircraft windshields, windows, and other transparent sections of Lucite, Lumenith, Vinylite, and Plexiglas, Wilco Anti-Static Plastic Cleaner No. 5 is made by **Quality Polish Co.**, 2306 E. 38th St., Los Angeles 11, Calif. Semi-fluid liquid is stated to leave surface clean, lustrous, and with microscopically thin, protective wax film possessing marked anti-static properties. Film retards fogging and reduces plastic's coefficient of friction with objects, thus reducing scratching or blurring.

New LF/DF Developed

Low frequency direction finder for aviation use as fixed ground installation is announced by **International Telephone & Telegraph Corp.**, 67 Broad St., New York 4, N.Y. Developed by company's associate, Standard Electric Argentina, Buenos Aires, equipment's antenna system comprises spaced monopoles forming Adcock system. Five vertical antennas are 45 ft. long, on corners and center of 105-ft. square, each being connected to coupling unit to match high impedance transmission lines, and having 2 × 4 ft. copper-sheet individual ground buried in horizontal position at 1½-ft. depth. Receiving equipment is 197 to 230 ft. from control antenna, and is connected to system by special cables. For traffic, simple L is used, 32 ft., 10 in. long and high. Comometer is independent unit supplying required bearing information via graduated dial with two indicating needles at 90 deg. with each other, this arrangement in connection with central antenna permitting simple "sense" operation. Receiver, 11-tube superheterodyne, receives continuous wave and amplitude modulated continuous wave telegraphy and telephony. Equipment has power output of 1.5w. and output impedence of 8 and 500 ohms. Power supply of unit operates on 220v. 50c., or batteries.

AVIATION SALES & SERVICE

Aim At Luxury Air Market, ADMA Convention is Told

Nieman-Marcus merchandising director tells distributors mass market not yet ready for private flying; urges more lightplane resorts.

An intensified program of aviation merchandising aimed at getting the luxury-minded customer in the air as a necessary fore-runner to building a broad mass market for personal aviation, was urged at the Aviation Distributors and Manufacturers Association convention at Dallas.

Approximately 200 executives of aircraft parts and accessories manufacturing firms and their distributors attended the two-day convention which concluded with the election of Robert B. Kenty, Air Associates, Dallas, as new president of the Association succeeding A. J. Weatherhead, of the Weatherhead Company, Cleveland.

▶**Fashion Selling Tips**—Joseph Ross, director of merchandising, Neiman Marcus department store, Dallas, told ADMA members that selling aviation was similar to launching a new fashion. The middle class buyers in large numbers will follow the lead of the luxury buyers, but first aviation merchandising must cater primarily to a "class" market.

"Aviation industry's past and present tactics have been predicated on the assumption that a mass market exists today for the private airplane. This mass market doesn't yet exist," Ross said.

▶**Urges Luxuries**—He urged providing a "multitude of special luxury privileges for enjoyment of monied folk owning or flying in private aircraft' and widespread development of resort airport setups similar to the Flying L. Ranch at Bandera, Texas.

"Some of you may have the reaction that this has nothing to do with problems of airplane parts but rather of airplanes. But if the end product of your industry sells, most of your problems will be solved. I have a suspicion there's nothing wrong with the parts business which an ever-widening market for private airplanes can't cure."

▶**Stress Flying**—President-elect Kenty advised the ADMA group to "keep your eye on the ball—and the ball is the completed, flying private airplane. If it's not in the air, we're all sunk. Talk flying, practice flying, and use airplanes in business."

Appeals for manufacturers to give more consideration to the costs of successful merchandising were voiced by Walter B. Hawkins, Air Parts, Glendale, Calif., and by G. B. Van Dusen, of Van Dusen Aircraft Supplies, Minneapolis. Hawkins asserted that his distribution costs on the West Coast are higher than similar costs in the East. He said at least a 35 percent discount was needed in order to make a profit. Van Dusen pointed out that the manufacturer expects his distributor to send out traveling salesmen, to advertise and promote, to carry an inventory of parts in his warehouse, and to maintain other necessary sales functions, yet many of the manufacturers do not allow their distributors sufficient margin of profit to make these activities pay off.

▶**Hoedown Party**—A Western hoedown party sponsored by the Aviation Association of Dallas and Southwest Airmotive Company, Dallas, put the ADMA delegates into plaid shirts and blue jeans for the entertainment highlight of the convention.

Lt. Gen. Edward Rawlings, Air Force Comptroller, speaker at the closing banquet told ADMA that "the Air Force is now being operated on a business basis and the country can be assured it is getting the most airpower possible for the dollars appropriated."

A silver bowl was presented to retiring president Weatherhead, as a token from the Association. Other officers named: Richard Bomberger, vice president, Sensenich Corp., Lancaster, Penna., and Van Dusen, vice presidents; H. Donald Richards, secretary; George Fernley, executive secretary, both of Philadelphia.

Directors named: Hawkins, Charles F. Irons, Synder Aircraft Corp., Chicago, E. L. Crabb, S. A. Long Co., Wichita, Lawrence Zygmunt, General Aircraft Supply, Detroit, W. B. Matthews, Western Aero Supply, San Antonio, A. M. Recker, Goodyear Tire & Rubber Co., Akron, Earle Scott, Scott Aviation Corp., Lancaster, N.Y.; James Riddle, National Aeronautical Corp., Ambler, Pa., R. D. Hicks, Continental Motors, Muskegon, Mich., and E. T. Sybertsen, Thompson Products, Cleveland.

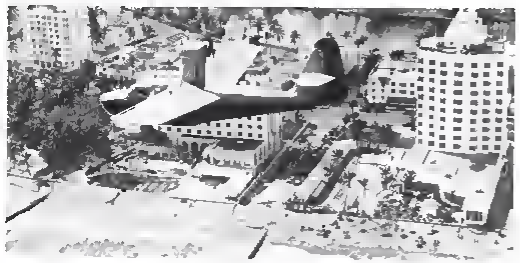
ADMA Prods VA

Delay by the Veterans Administration in making payments to flight schools in the GI training program has been reflected in large increases in the accounts receivable of Aviation parts and accessories Distributors. Don Richards, secretary of Aviation Distributors and Manufacturers Association, reported at the recent Dallas ADMA meeting. The ADMA office has been "in close touch" with A. H. Monk, director Training Facilities Service, VA, Washington, and regional directors, "to see that those operating under the program are paid more promptly." As a result of ADMA's prodding the VA out of its inactivity, a number of distributor members have been able to obtain payments on a number of accounts past due, and the Association expects to continue to take up similar matters with VA as members request it.

Distributors Plan Engine Parts Exchange

New system of cooperation between Pratt & Whitney Distributors to improve standards of service to engine owners were evolved at a Dallas meeting of P&W officials with heads of four firms officially representing them in the United States.

Present for the meeting were: Morris Triggs, Francis W. Perkins and David D. Bloomfield of Pratt & Whitney's service department, East Hartford, Conn.; George W. Jalonick, III, and Winston C. Castleberry, vice president, Southwest Airmotive Company, Dallas; Wallace O. Leonard, president, Pacific Airmotive, Burbank, Calif.; J. V. Thompson, president, and Paul D. Myers, vice president, Airwork Corp., Millville, N.J., and Wallace J. Clark,



DUCK AT MIAMI BEACH

Along with the big Goodyear blimp seen every winter in Miami, one of the new three-place GA-2 Goodyear amphibians is now circling over the Florida resort town. It is one of the service-test planes put out by Art Chapman at Goodyear to selected flight operators for a trial to uncover any hidden maintenance problems and to test public reaction to possible marketing. Dick Flynn, operator of Miami Aviation Center, Inc., has the GA-2 at Miami. Meanwhile Sydney Nesbitt, president of Atlantic Aviation Corp., Teterboro, N. J., has completed his service test on the first Goodyear Duck farmed out to operators. Nesbitt says he would like to sell them if Goodyear markets them, that maintenance problems are no more than those on other planes and that a number of financially responsible riders indicated a desire to buy if the amphibian is marketed.

president, Northwestern Aeronautical Co., St. Paul, Minn.

To help eliminate delays in engine overhauls, the distributors agreed to furnish one another with complete lists of "overstock" parts from which hard-to-get and obsolete units may be ordered. Thus, each of the four distributors will at all time have ready sources of supply for parts not now in production. Not only will this cooperative supply system speed up and improve customer service, but it will enable distributors to "move" valuable merchandise which they might not otherwise be able to sell in their respective territories.

It was pointed out that distributors all have a full inventory of late and current P&W parts, but that occasionally certain engine types require obsolete items which the factory can supply only by retooling and going into special production.

"We can eliminate delay by letting one another know what we have on our shelves," Jalonick said. "Chances are that, instead of having the factory reproduce special parts, we can find those parts in a warehouse of one of our fellow Pratt & Whitney distributors."

Details of this interchange of inventory data will be worked out immediately by purchasing agents of the four companies.

The four also agreed to adopt as their own the official Pratt & Whitney "standard conditions of sale" which provides the customer with a factory guaranty against defective materials and workmanship in overhauls. Further, distributors will specify that adjustments where required may be made only by the factory or by one of the four authorized sales and service organizations in the field.

The entire program of distributor cooperation will be conducted with factory counsel and assistance. Delegates from each distributor will confer again with Pratt & Whitney executives in East Hartford early in 1948. Similar sessions to iron out common problems will be held by the Pratt & Whitney "team" at regular intervals.

New Airport Account Methods Are Planned

Problem of airport bookkeeping, always a headache to the small fixed base operator, is being attacked by a recently-formed organization, Aviation Business Counsel, First National Bank Bldg., Chicago, Ill.

An airport bookkeeping service which includes monthly balance sheet, monthly profit and loss sheet and monthly report on important operating statistical data, is supplemented by a tax service, an insurance counseling service analyzing all types of aviation insurance, a real estate service for new airports, and engineering service on airport layout, planning, structures and maintenance.

▶**Firm Affiliations**—The new firm is affiliated with Real Estate Research Corp., and Downs Mohl and Co., property management firm, also of Chicago, and utilizes their services in its program.

Combined book-keeping and tax services are provided for 1 percent of gross income, not including new and used plane sales, which are charged at $5 each, with a minimum fee of $25 a month, and negotiation of fees after they reach $100 a month. An initial charge of $20 a month for setting up the books on a new account is made. A complete audit, if necessary, is done on a cost basis at $5 an hour for the auditor's time, plus his expenses.

▶**Check List**—Operator is provided with a check list of weekly and monthly reports to be filed, including weekly cash report, copies of machine tickets recording all transactions, and duplicate deposit slips. Monthly reports include list of checks, bills paid, bills unpaid, inventory, customer statements, statement to Veterans Administration, form W-4 (Social Security) for each new employe, merchandise used by operator, hours logged, bank statement, report of cash on hand.

San Diego Gets Field Lease For Airlines' Alternate

City of San Diego has obtained joint use with the Navy of the Miramar Airport, which is valued at $8,000,000, by payment of $1 for a 50-year lease. It will be used as an alternate field when fog closes Lindbergh Field to the three major airlines using that airport. Miramar has two 6,000-ft. concrete runways and modern facilities. The Navy will continue to man the operations tower, at no cost to the city, and will furnish fire and crash crews as well as weather information service. The city has obtained exclusive use of most of the west wing of the airbase administration building, where a portion has been remodeled into a waiting room and ticket office counter.

The CAA has certified Miramar as a provisional field so that airliners may file flight plans to it when Lindbergh Field is closed down. American and United Airlines have both applied to CAA for approval of such use. While there has been some discussion of eventually making Miramar the main terminal because of its infrequent foggy condition and the ruling that instrument landing will not be permitted at Lindbergh Field, it was pointed out that Fido could be installed at Lindbergh Airport more practicably than transferring main terminals.

Sponsors Race

A silver trophy and $10,000 in cash will be prizes in a Continental Motors Trophy race at the 16th annual Miami All-American Air Maneuvers Jan. 9-11. Planned as an annual event in connection with the maneuvers, the contest is expected to stimulate lightplane design improvements.

Weather Factor in Snell Bonanza Crash

Failure to obtain adequate weather information is indicated by the CAB Safety Bureau as a major factor in the crash of a Beech four-place Bonanza, 23 miles southwest of Lakeview, Ore., Oct. 28, in which Earl Snell, Governor of Oregon, two other passengers, Robert Farrell, Jr., and Marshall Cornett, and the pilot, Clifford Hogue, were killed instantly.

A "preliminary statement of facts" issued by the Safety Bureau reports that the plane took off from Klamath Falls, Ore. en route to Adel, Ore. at 10 PM. and crashed about 30 minutes later, on Dog Mountain at elevation between 5,000 and 6,000 ft.

Hogue had been advised by CAA communications office of a forthcoming amended forecast from Seattle, which described condition of low layers of clouds around 7,000 ft. in the mountain area, over which the flight was made, but did not wait for the forecast. Although the plane was equipped for instrument flight, Hogue did not have an instrument rating, and his log book and CAA records do not indicate that he ever accomplished any instrument training, the report states. He had received a private pilot license in 1942, and subsequently received CAA ratings as commercial pilot, flight instructor, and pilot examiner.

Report states that no indication was found in the plane wreckage of any structural or mechanical failure prior to crash. Neither radio transmitter nor radio receiver were at all operative during the flight.

A final CAB report on the accident will be issued following further study of available facts.

Hybla Valley Fire Destroys Hangar and Nine Planes

Damage estimated at $50,000 to $75,000 resulted from a fire at Hybla Valley Airport, Alexandria, Va., which destroyed a hangar and adjoining lean-to containing waiting room, stock room and restaurant. Nine planes, including three owned by Ashburn Flying Service which owns and operates the field, were destroyed in the hangar while spectators rolled other planes out of the path of the flames. W. R. Ashburn, operator of the airport, which is one of the most used by private flyers in the Washington area, said that operations were continuing, that the majority of the loss was covered by insurance, and that a replacement building program would be started soon. A cigarette dropped in the waiting room was believed to have started the fire.

BRIEFING FOR DEALERS & DISTRIBUTORS

STINSON AND LUSCOMBE LEAD—Stinson and Luscombe were the leaders in shipments of four- and two-place planes respectively in November, according to an advance unofficial tabulation of shipments by major personal aircraft manufacturers received at the Personal Aircraft Council, Washington. A total of 581 commercial lightplanes and 106 military two-placers were reported for the month. Reports by companies: Republic, 16; Funk, 3; Beech, 100; Cessna, Model 120, 15; Model 140, 8; Model 190, 5; Model 195, 15; Luscombe, Model 8, 110; Texas Engineering and Manufacturing Co., Swift 125, 24; Aeronca, 106; Army liaison planes, 30; commercial planes, Bellanca, 7; Stinson, 159; Ercoupe, 3; Ryan, 1; Piper, J-3, 10; PA-11, 30; Super Cruiser PA-12, 45. Reports had not yet been received from Taylorcraft and Fairchild.

BURY WIRES, NOT PILOTS—First recent case of a concerted campaign by pilots against power-line hazards near private airports, resulted in action by the Carolina Power & Light Co. toward rerouting wires, which had been placed near the edge of Timmonsville, S. C. airport. Approximately 152 pilots from 27 communities in four Southeastern states flew in for a protest breakfast flight, at Columbia, S. C. Dec. 7, sponsored jointly by Aircraft Owners and Pilots Association, and local flying organizations. Gov. J. Strum Thurmond, of South Carolina, who attended the meeting, told the group that two of his best friends had been killed as a result of airplane collision with high-tension wires and asserted that "if we cannot get the wires down any other way I will ask for laws to be enacted to that end." Officials of the utility company announced that the day before the flight, they had begun a survey for rerouting the wires. J. B. Hartranft, Jr., AOPA general manager, urged emulation of the South Carolina demonstration in other parts of the country by private flying groups, to get action from power companies, in removing wire hazards from vicinity of airports.

PRIVATE FLYING DE LUXE—One of the most extensive private flying air cruises of the postwar era was the three months' junket which Tyrone Power, motion picture star, and commercial pilot with some 2,700 hr. has just completed in a Twentieth-Century Fox DC-3 which the film company purchased from Howard Hughes. Bob Buck, former TWA chief pilot, went along as stand-by pilot, but Power did the bulk of the flying. Power could get a job as an airline pilot, without any trouble, if his film career should terminate, Buck opines. The plane flew across the South Atlantic, non-stop from Natal to Roberts Field, Liberia, using extra tankage for a total fuel capacity of 1,600 gal., and then wandered around extensively in Africa, hitting among other spots: Accra, Leopoldville, Windhoek, Capetown, Mozambique, Nairobi, Addis Ababa, and then up through Greece, Italy, England, Ireland, and across the North Atlantic, via Iceland and Greenland and back to the West Coast. Buck reports that anybody who could get a light airplane across to Africa, could have himself a wonderful time since fields are relatively plentiful although most are grass fields. Flyers he talked to want to buy American lightplanes, but are usually buying British ones because of the dollar shortage. He heard repeated beefs about deterioration of wood planes. Beech Bonanza appeared to be about the most popular of American postwar planes at fields covered by their itinerary. Besides Power and Buck, the tour group included Bob Stevens, TWA navigator; Bill Ritter, radio operator; Bill Agnew, flight engineer; Bill Gallagher, Power's secretary, and Jim Denton, studio executive.

CRUISING AT 125 MPH—While Cessna has not yet released any official performance figures on the new four-place Model 170, Wichita reports are that the 145 hp. prototype plane is cruising at around 125 mph. which is about the same as the cruising speed of the higher powered Stinson Voyager 165, closest four-place price competitor of the 170 on the basis of prices announced thus far.

WELSCH AND LEECH—To straighten out any misimpressions that could have been derived from reading in Aviation Week Dec. 1 issue, about Spinney Leech's transfer from Stinson to Cessna in the New York area, let's point out right here, that Jim Welsch, one-time Stinson sales manager, is still the Cessna distributor in the New York metropolitan area with his Personal Airplane Sales Corp., while Leech Aircraft is now a Cessna dealer, franchised by Welsch's firm. The new combination gives Cessna one of the strongest personal plane distributor-dealer setups in the New York area.

—ALEXANDER McSURELY

POLITICAL ACTION—
Labor's Blind Alley

THE approach of the 1948 elections brings organized labor in America to a fork in the road.

Straight ahead lies the familiar route of free collective bargaining. Except for an occasional side trip, labor has been traveling it for years. On this road the role of government is to act as traffic cop, removing obstructions for all travelers.

The fork is the road of political action—the road to special privilege for labor. On it government is called upon to clear a special right of way for organized labor—to push aside all others

Which of these two roads will organized labor take?

Most American labor leaders are now urging their followers toward political action. Their first objective is to "get" all members of Congress who voted for the Taft-Hartley Act. AFL plans to raise a $5 million political combat fund through contributions and a per capita tax on its membership. CIO is soliciting $1 donations for political action from its 6,000,000 members.

For their own sake, however, as well as for the welfare of the country as a whole, the rank and file of organized labor will do well to stop, look and listen before they turn their unions into political action squads. If they examine the facts for themselves, they will make two significant discoveries:

I. Political action is a blind alley for labor.

II. The Taft-Hartley Act is an essential bulwark of free collective bargaining.

A brief discussion of these two statements will show what they mean to organized labor.

I

Political action is a blind alley for labor.

If there is any doubt about that statement, a good way to dispel the doubt is to look at European countries where organized labor has been following a political action line.

Britain, where the Labor Party is in power, is such a country. How is labor faring there? Measured by the good things money buys, the average hourly wage in Britain is less than two-thirds of what it is in the United States. Part of the difference may be accounted for by the fact that the British Isles are poorer in natural resources than the United States. Another reason is the war damage to Britain's plants.

But there are two other big reasons why the British wage earner is far behind the American worker in enjoying the good things of life.

1. The *incentive to produce* has been dulled by vote-catching programs which promise economic security and a levelling of incomes. Lulled by promises of cradle-to-the-grave security and discouraged by high taxes, the British have descended to a state neatly described by the London *Economist*:

   "Nobody gains anything from activity or suffers anything from inactivity."

2. To run a program like Britain's requires more and more government functionaries. Civilian employees of the British government have increased by 50% since before the war, putting one worker out of ten on the government payroll. More and more people stop producing and spend their time instead cutting up what others produce. The result is smaller production, higher taxes and lower real wages.

The British Labor Party must accept most of the responsibility for this sorry state of affairs. It is due primarily to a program of political action by organized labor which promised the individual worker security and equality of income—*but which can not deliver either because the incentive to work is gone.*

The lesson for American wage earners is clear. Political action by unions to enforce the economic fallacy of more-and-more-for-less-and-less will end by impoverishing the working man—and bringing the nation to ruin.

Unions exist for collective bargaining, not for politicking.

II

The Taft-Hartley Act is an essential bulwark of free collective bargaining.

Bargaining works satisfactorily only when both parties—management and labor—think they are getting a fairly even break.

Management was very sure that the Wagner Act, as administered from 1935 to 1947, was giving employers the short end of the stick. Furthermore, management's feeling of frustration was no whim. It was justified by case after case where rights were granted to organized labor with no counterbalancing recognition of the rights of management, of individual workers or of the public.

The Taft-Hartley Act goes a long way toward establishing equality in employer-union relations. It may fall short of doing a perfect job. *As a subsequent editorial in this series will show, it leaves virtually untouched the public menace of industry-wide bargaining and labor monopoly. And it leaves unprotected what should be the individual's right to hold a job without joining any particular organization.* But it does provide some major safeguards for collective bargaining by striking at abuses.

Organized labor, therefore, has no cause to damn the members of Congress who voted for the Taft-Hartley Act. True, the law will check what has been an uninterrupted march of the labor union bosses toward absolute power. It will do so just as laws in the past—The Sherman Anti-Trust Act, for example—have checked management when it was too greedy. And, as the first section of this editorial points out, the time has come to check the march of the big labor bosses.

Fundamentally, the Taft-Hartley Act gives free collective bargaining a new lease on life. The old lease was running out because the Wagner Act stacked the cards against employers, against individual workers, and against the public.

The road to free collective bargaining is now clear of many of the most menacing obstructions. It is the only road for labor to take in its own self interest. Union workers who let their leaders lure them down the blind alley of political action will do so at their own peril—and at the peril of this great industrial nation.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

THIS IS THE 63rd OF A SERIES

AIR TRANSPORT

Airfreight at Record Volume As Carriers Plan for 1948

Sixty-fold increase in business recorded in two years, with 1947 traffic approaching 100,000,000 ton miles; ground facilities growing rapidly.

By CHARLES ADAMS

Boasting a 60-fold growth during the past two years, domestic airfreight progress will contrast sharply with disappointing passenger traffic gains in 1947 by showing gross revenues exceeding $17,000,000 on record loads totaling 100,000,000 ton miles.

In November, 1945, 16 domestic trunklines flew only 201,000 freight ton miles, and most of the certificated carriers had no freight tariff in effect. By October of this year, the 16 certificated trunklines were flying nearly 6,000,000 freight ton miles monthly, with volume still climbing.

▶ **All-Cargo Lines**—But the independent air cargo carriers, whose development has been a major post war phenomenon, have continued to keep ahead in the highly competitive race for business. During the first ten months of 1947, the seven top all-cargo lines flew more than 40,000,000 freight ton miles, compared to about 27,500,000 ton miles for all certificated carriers.

By year-end, the independents, including a number of smaller carriers not shown in the accompanying table, probably will have flown over 60,000,000 ton miles. The certificated lines, which apparently are inching up on their competitors, will have flown about 40,000,000 freight ton miles. Total domestic airfreight volume during the last quarter of 1947 probably will average 15,000,000 ton miles monthly, against a maximum of 250,000 ton miles in November, 1945.

With contracts for joint pickup and delivery now in effect at more than 40 points throughout the country, a growing fleet of trucks is taking on the new red, white and blue markings of Air Cargo, Inc., the certificated airlines' ground service organization. Next year the words "air freight" shown on the truck above probably will be changed to "Air Cargo", a term which the certificated airlines will use to designate their entire service for the shipment of property. Some of the cartage companies under contract to Air Cargo, Inc., confine their activities exclusively to airfreight, while other truckers have airfreight divisions and assign special vehicles to service the airlines.

▶ **Revenues Listed**—Airfreight has yielded the independents gross revenues of around 14 cents a ton mile this year. Assuming 60,000,000 ton miles for 1947, their total revenues will be about $8,400,000.

The certificated carriers' income from airfreight averaged about 26 cents a ton mile during the first half of the year, but by October rate cuts had brought the gross down to around 22 cents a ton mile. With a 40,000,000 ton mile year, the 16 trunklines should take in about $8,800,000 from airfreight.

▶ **Leading Carrier**—Slick Airways, which has been operating 11 C-46s and a DC-4, led all other airfreight carriers during the first 10 months of 1947 by flying 17,770,000 ton miles. American Airlines, using 3 all-cargo DC-3s and 7 all-cargo DC-4s, plus space on regular passenger planes, flew 9,369,000 freight ton miles in the same period. Other leading freight carriers in the first ten months of 1947 were California Eastern Airways, 8,845,000 ton miles; United Air Lines, 7,723,000 ton miles; Santa Fe Skyway, more than 5,000,000 ton miles; The Flying Tiger Line, 4,546,000 ton miles; and TWA, 3,741,000 ton miles.

Last year, with Slick and American in the same one-two order, domestic airfreight totaled about 66,000,000 ton miles. The certificated lines in 1946 flew around 19,000,000 ton miles and the independents, according to a Commerce Dept. estimate, about 47,000,000 ton miles.

▶ **Rate War Halted**—Currently, CAB is holding back the rate war which developed last summer and fall between the certificated and uncertificated carriers. Results of the Board's investigation of tariffs should be available early next year, together with revealing facts on the actual cost of carrying freight, distribution of cargo by weight, distance shipped and type of commodity; direction of shipments, and investment in freight operations.

Certificated carriers will furnish CAB with detailed breakdowns showing expense applicable to freight operations. The independent lines have charged the certificated carriers do not know how much their freight operations cost since this expense has not been segregated from passenger, mail and express costs.

▶ **Losses Cited**—According to the independents, the certificated carriers are losing substantially on airfreight operations and are subsidizing cargo with mail pay. The independents will as a group show substantial losses on freight during 1947. Slick, California Eastern, Willis Air Service and others did, however, come out of the red during the early fall.

All carriers are optimistic about air freight tonnage next year. Rising costs (including higher wages and gasoline prices) together with equipment limitations probably will prevent general rate reductions even if CAB permits further cuts. But considerable adjustment and experimentation is inevitable when the rate freeze is ended.

▶ **New Equipment**—By summer, all-cargo Constellations or DC-6s may be added to the fleets of some carriers. Operators are deeply interested in the commercial possibilities of the Fairchild Packet and may be able to conduct extensive tests with this craft. The Boeing Stratofreighter and Curtiss-Wright CW-32 will continue to get serious attention.

The certificated airlines in 1948 will make an all-out bid to take over the bulk of the airfreight volume. American Airlines has announced that its airfreight now surpasses any other source of income except passengers. In previous years, mail has furnished American with its second largest source of income.

▶ **Comparison With Express**—During the last quarter of 1947, aggregate freight revenues on the 16 certificated trunklines probably will push ahead of express revenues for the first time. In calendar 1946, express revenues exceeded freight revenues by more than 2 to 1.

Both certificated and uncertificated carriers have developed extensive plans for interchange of air cargo with surface motor lines. Both groups hope to extend their services to practically all points in the U. S. through the local trucking concerns.

▶ **Ground Service**—The certificated airlines, through Air Cargo, Inc., their ground service organization, have had their first consolidated freight terminal in operation at Willow Run Airport, near Detroit, for almost five months. It is expected that the second such facility will be opened at Chicago Municipal Airport early next year, with others following shortly at Los Angeles and San Francisco in premises already under lease or option.

A mid-town combination terminal and receiving station may be available in New York City by next June.

Through Air Cargo, Inc., the certificated airlines signed their initial contract for joint cartage service at Milwaukee on May 16. By Nov. 15, joint pickup and delivery contracts were in effect at about 40 points throughout the country, with 589 trucks and 1,008 employes engaged in airfreight cartage and incidental services.

PRINCIPAL U. S. AIRFREIGHT CARRIERS

Carrier	Ton Miles First 10 Months 1947	Ton Miles 12 Months 1946	All-Cargo Aircraft As of Nov. 1, 1947 DC-3	C-46	DC-4	Total
Slick	17,770,000	11,198,000	—	11	1	12
American	9,369,000	10,490,000	3	—	7	10
Cal. Eastern	8,845,000	3,313,000	—	—	5	5
United	7,723,000	4,445,000	13	—	3	16
Sante Fe Skyway	5,000,000 plus (est.)		3	—	4	7
Flying Tigers	4,546,000	5,798,000	15	—	4	19
TWA	3,741,000	2,216,000	6	—	2	8
Willis	2,054,000	2,400,000	4	—	2	6
PCA	1,828,000	418,000	2	—	2	4
Eastern	1,500,000 (est.)	320,000	3	—	—	3
U. S. Airlines	1,226,000	2,567,000	5			5
Flamingo	1,073,000	1,045,000	5	—	—	5
	64,675,000	44,210,000	59	11	30	100

CAB Finds Piedmont Entitled to Certificate

Selection of Piedmont Aviation, Inc., Winston-Salem, N. C., rather than State Airlines, Charlotte, N. C., to operate feeder routes in Virginia, West Virginia, North Carolina and Kentucky has been reaffirmed by the Civil Aeronautics Board.

CAB originally designed Piedmont for the local routes in its Southeastern States Area decision last April. State Airlines charged that Piedmont was not fit, willing and able to operate the services authorized, adding that CAB had committed legal error by designating Piedmont for a route not specifically requested.

In its supplemental opinion, CAB said that Piedmont's certificate application was sufficiently broad to cover the routes awarded to it. The Board added that Piedmont has adequate financing and possesses the ability to conduct the service authorized.

Last April, Piedmont was designated for certification contingent on a further showing of adequate airports along its routes. The Board has now decided that adequate airports are available and has actually issued Piedmont the temporary certificate which permits inauguration of service when the carrier is ready.

PCA Names Austin, Dever to New Posts

Appointment of James W. Austin as director of traffic and sales and Hayes Dever as public relations director of Capital Airlines (PCA) has been announced by president J. H. Carmichael.

Austin has been associated with PCA as general traffic and sales manager since early last year. He will now have complete jurisdiction over traffic, sales and advertising activities of the carrier.

Dever, who has been with PCA for 13 years, will be in charge of passenger service, passenger relations, reservations, ticketing, hostess department and economic research. He will continue to serve as secretary of PCA, a post to which he was elected in 1944.

Other personnel developments:

American—Eugene C. Thyler has been named assistant director-passenger service and Frank W. Jones, formerly assistant to the president, has become assistant director-cargo service.

Eastern—J. Gordon Dammeroll has been appointed regional cargo sales manager in New Orleans.

Pan American—Melville E. Stone has become sales promotion manager succeeding K. C. Genier who resigned.

Slick Airways—Lewis J. Moorman, Jr., formerly vice president and secretary has become executive vice president.

Transocean Air Lines—Thomas T. Hinman has been named general manager Atlantic-European division, with offices in New York.

RICKENBACKER HONORED

Shown below an Eastern Air Lines Constellation is the newly-opened $6,000,000 Rickenbacker Causeway linking the Florida mainland (foreground) with Virginia Key and Biscayne Key. The Miami project was named for Capt. E. V. Rickenbacker, president of Eastern Air Lines.

Behncke Attacked For Strike Threat

Rep Carl Hinshaw (R, Calif), vice chairman of the Congressional Aviation Policy Board, has advised members of the Air Line Pilots Association to unseat their president, David L Behncke, and the union chieftain, in reply, has called on the voters of the Twentieth Congressional District in California to do the same with regard to Rep Hinshaw

Attacking ALPA's threatened strike action against United Air Lines as an unnecessary peril to the nation's security, Hinshaw publicly charged Behncke with irresponsibility The Congressman said it is now time for the pilots to assert their independence by refusing to enter the blind alley pointed out to them by their 'professed leader"

▶ **Defines Issue**—Hinshaw asserted that the issue raised in the United Air Lines controversy is both inconsequential and juvenile, "the carrier merely having requested that an employe with a grievance discuss it first with his immediate superior so that it can be solved at once, if possible If the grievance cannot be solved immediately, the pilot has full recourse through regular channels already provided," Hinshaw stated

A breakdown in the airlines essential services today may well bring bankruptcy to many of them as well as to the aircraft manufacturing industry, according to the congressman He criticized Behncke's "lust for power" and said he was confident the pilots would "clean their own house"

▶ **Behncke Replies**—Replying to Hinshaw, Behncke pointed out that under the Railway Labor Act a strike vote is not a strike, "nor even a guarantee that a strike will result" The union leader charged Hinshaw with "character assassination" and with being the "self appointed mouthpiece of United Air Lines"

Behncke disclosed last week that negotiations were no longer in progress between ALPA and United over the disputed contract provision on grievance machinery He said the strike vote among UAL pilots probably will be completed by Jan 1 It is understood, however that enough ballots had been counted by Dec 15 to authorize a walk out

Pan American Agrees To Raise Pilot Wages

Pan American Airways has signed a new agreement with the Air Line Pilots Association providing substantial wage increases retroactive to Aug 1

Master first pilots will be paid from $990 to $1,120 a month—a raise of $37 to $60 monthly over the old scale Master first pilots flying Boeing Stratocruisers which are expected to go in service by June will receive $2 50 an hour extra for revenue flight time

Regular first pilots will receive from $717 to $920 monthly against the former range from $627 to $830 Master co-pilots will be given increases of $35 to $55 making their monthly pay range from $375 to $625 The new scale for regular co-pilots is $275 to $555, an increase of $35 to $85 monthly

CAB SCHEDULE

Dec 22 Hearing on revocation of American International Airways letter of registration as irregular carrier (Docket 3167)

Jan 5 Hearing on Mid-Continent's application for alternate Kansas City-New Orleans route (Docket 1956)

Jan 8 Hearing on Board's investigation of Consolidated Airfreight Tariff Agreement (Docket 3118)

Jan 19 Hearing on requests of Braniff and Chicago & Southern for removal of restrictions on Chicago-Houston service (Docket 1681 et al)

Jan 27 Hearing on Teca S A foreign air carrier permit renewal and amendment case (Dockets 3018 and 3017)

Feb 2 Hearing on Board's investigation of airfreight rates (Docket 1785 et al.)

Feb 4 Hearing on Continental Air Lines route consolidation case (Docket 576 et al)

Feb 16 Hearing on St. Louis-Twin Cities route applications of Eastern Air Lines and Mid Continent Airlines. (Docket 1050 et al)

Feb. 16 Hearing on additional service in New England area. (Docket 1278 et al)

SHORTLINES

▶ **American**—Has asked CAB to stay that part of its decision in the North Central Case (Oct 10) which granted PCA a route extension from Milwaukee to Minneapolis/St Paul AA's bid for a link from Chicago to the Twin Cities was denied at that time PCA began service to Minneapolis/St Paul on Dec 1

▶ **KLM**—During 1946 earned about $310,000, thereby showing its first profit since the company was founded in 1920

▶ **Mid-Continent**—Installation of the Hughes terrain clearance indicators on the carrier's DC-3s will begin late this month, with the project to be completed in about eight weeks Twenty four of the radar units are on order

Company's airfreight traffic has increased each month since the service was inaugurated on Jan 1, 1946 October, 1947, freight business gained 150 percent over September

▶ **Northwest**—Reports the War Department has removed all restrictions on civil airline passage through Japan for travelers of all nationalities The step affects all NWA passengers on flights to Shanghai or Manila Military permits are still required for stopovers in Japan

▶ **Pan American**—Has asked CAB authority to operate domestic air services connecting the main islands of Japan The request is in the form of a proposed amendment to PAA's present certificate permitting the company to serve Tokyo on its round the world route

▶ **Pioneer**—Plans to inaugurate service to Plainview, Texas, on Jan 5

▶ **Resort Airlines**—Has been denied a CAB exemption to conduct all-expense air tours to Caribbean and Central American points The Pinehurst, N C, company's bid for a certificate—strenuously opposed by a number of regular airlines—was presented before a CAB examiner last month

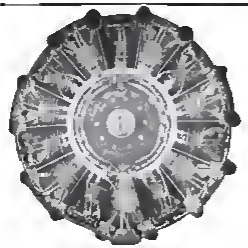
▶ **TWA**—Reports Nov 26 (the day before Thanksgiving) was the heaviest single traffic day in its history Company carried 4,400 passengers and had a system-wide passenger load factor of 80 2 percent for the 24-hour period TWA's load factor for the entire month of November was 61 percent

▶ **United**—Has transferred $2,000,000 from a depreciation reserve to surplus in view of the longer operating life now expected on its DC 4s UAL originally planned an operating life of two years for the DC 4s, but this has now been extended due to a delay in the acquisition of new planes Normal depreciation reserves now will cover adequately the DC-4s expected life Company has signed an agreement with Hertz Drive-Ur-Self System whereby UAL passengers will be able to wire ahead to use Drive-Ur-Self cars in more than two thirds of the carrier's 75 cities

NWA Seeks Higher Domestic Mail Rate

Higher costs which will result in operating deficits aggregating an estimated $2,900,000 between Nov 1, 1946, and Dec 31, 1947, have forced Northwest Airlines to join the ranks of carriers seeking mail pay increases from CAB NWA's action left American Airlines the only one of 16 domestic trunklines without a mail pay petition before the Board

Between Nov 1, 1946, and Dec 1, 1947, Northwest will receive about $1,500,000 from domestic mail compensation at its present rate of 60 cents a ton mile The carrier is now requesting an additional $1 400 000 in mail pay (plus a fair profit) over routes 3 and 3F for the period Jan 1, 1947, through Dec 31, 1947 Besides the retroactive increase—which may be denied in view of CAB's recent decision in the TWA and PCA cases (AVIATION WEEK, Dec 15)—NWA asked for a domestic mail rate of $1 54 a ton mile (plus a fair return) on and after Jan 1 ,1948



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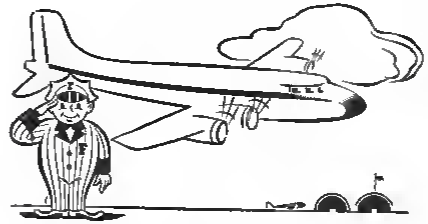

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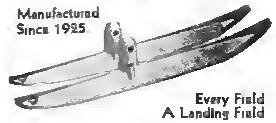

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EDITORIAL

What Is News?

Air Transport Association's Information Department protests the story in AVIATION WEEK Dec. 8 which summarized the results of an ATA report on instrument landing system installations throughout the country.

The Association's press agent says: "The AVIATION WEEK has picked over the report to point up the negative factors, not trying to balance them with the good and, therefore, winding up with what looks to be a very poor result."

AVIATION WEEK thinks it is the "negative factors" that cause accidents. There were a lot of them in the ATA report, and they were listed by the story in AVIATION WEEK. Comments we have received from airline pilots indicate considerable interest in these "negative factors."

The ATA praise man goes a step further, in a rather effective attempt to insult us, by saying: "Your policy is your own business and I understand that handling of this story was influenced by your official editorial attitude toward the CAA. Please don't use us to prove your policy point."

The policies of this page are not passed along to the staff of this magazine. The staff sometimes disagrees but what they write gets printed, anyhow. It so happens, however, that our staff generally thinks our report on the malfunctioning phases of ILS is of more interest to this industry than a routine rewriting of ATA's nice press blurb which said that things generally were pretty good. And all we did was to quote ATA's own report. At this stage of the ILS program most of us have a right to believe that CAA ought to know how to run its own pet system. Our writer included nothing that was not in ATA's report. If the praise agent thinks our story of the report helps to prove our editorial point about CAA's inadequacy, however, we agree with him.

The spokesman says further:

"Our press release on the subject was based on the report itself, on all of it, both the good and the bad, and the press release was approved by our operations people. If we were trying to make any differential between the report and the release—which it is never our custom to do—why would we go right ahead and give you and other journalists the exact copy of the report, too? We're dumb sometimes, but not that dumb."

The press release was general, without any of the detail that aviation readers demand, hence it was of no use to an aviation publication. The lead of the ATA's blurb said 'definite progress" was "indicated." We in aviation take that for granted. We want to know just how much progress and what still holds up all weather flying. Our story told you. Furthermore, ATA did not give us a copy of the report, and there is a statement printed on every such report—including this one—that the material is confidential and not to be given to any publication. That leaves the last sentence of the preceding paragraph open to any interpretation you care to make.

We think the most devastating comment on the ATA report, however, was made to our reporter by Charles Stanton, then CAA deputy administrator. Mr. Stanton said he had read the report, with its long list of CAA operations inadequacies, but did not think CAA needed to do anything as a result of the ATA survey. That is another reason why Mr. Stanton's departure from CAA on a "leave of absence" to direct a school in Brazil is a fortunate development for CAA.

To give ATA's press relations man the last word, he says: "We still think that the ILS installations are, on the whole, good, that the things to be corrected are, for the most part minor, and that the corrections already are being made." Our readers may decide this issue for themselves.

Our Readers, Bless 'Em

Fortunately for us, an increasing volume of letters from readers has been directed at AVIATION WEEK since its first issue in July. All have been voluntary and spontaneous.

Every one of these communications is read by the staff, and is acknowledged. Success of any magazine depends on the bond between the editors and their readers. Outside of the subscription renewal rate, nothing is a better index to readership than the editor's mail. Both of these have been rising. This makes us happy.

Although we are not yet six months old, it is a statistical fact that AVIATION WEEK is carrying more advertising than any of the other 20 odd aeronautical periodicals. It is also giving its readers more editorial pages than any other U. S. aeronautical magazine.

All of this, however, means that this staff has a responsibility to exceed—not merely to maintain—the standards which have been set in less than half-a-year. We have ambitious plans for AVIATION WEEK editorially in 1948. We appreciate the response from readers.

We invite our readers to tell us what they would like to see in AVIATION WEEK and why, and what they don't like about us and why. We have faith in their fairness. We can take it.

ROBERT H. WOOD

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